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UNIVERSITY OF TORONTO

President's Report

FOR THE YEAR ENDING
30TH JUNE, 1928

1927/28

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UNIVERSITY OF TORONTO

PRESIDENT'S REPORT

1927-1928

To the Governors of the University of Toronto:

GENTLEMEN:

I beg to submit the following report on the academic work of the University and University College during the twelve months ended June 30, 1928.

The total staff of the University and University College numbered 689, of whom 101 were professors, 71 associate professors, 62 assistant professors, 133 lecturers, associates (in medicine) and instructors in the College of Education, 1 director, 1 director of field work, 320 demonstrators, fellows and instructors with sessional appointments. They were distributed as follows:

	Professors	Associate Professors	Assistant Professors	Associates	Lecturers	Directors	Assistant Directors	Instructors	Other Sessional Appointments
University (Faculty of Arts).....	36	16	24	—	21	—	—	—	78
University College.....	12	15	4	—	8	—	—	—	10*
Faculty of Medicine.....	21†	14	24	20	10‡	—	—	—	168
Faculty of Applied Science.....	14	11	9	—	12§	—	—	—	35
Faculty of Household Science....	2	—	1	—	3	—	—	—	7
Faculty of Forestry.....	2	2	—	—	1	—	—	—	—
Faculty of Music.....	—	—	—	—	4	—	—	—	—
Faculty of Dentistry.....	12**	7††	1‡‡	16***	2§§	—	—	—	23
Public Health Nursing.....	—	—	—	—	15†††	1	—	—	—
Social Service.....	1	—	—	—	12	—	1	—	—
Ontario College of Education....	3	7	—	—	5	—	—	15	—

*1 also in Applied Science
†1 also in University
‡1 also in Dentistry; 2 also in Ontario College of Education
§1 also in University
**1 also in Medicine
††1 also in Medicine
‡‡1 also in Medicine
§§1 also in Medicine
***1 also in Medicine
†††4 also in Medicine; 1 also in Dentistry

In Victoria College there were:

Professors	14
Associate Professors	6
Lecturers	4
Instructors	2
Fellows	2

In Trinity College there were:

Professors	10
Lecturers	4

In St. Michael's College there were:

Professors	16
Lecturers	12

I regret to report the death of Professor John Squair, on February 15, 1928, and of Professor John Thomas Crawford, on July 17, 1928. Since his retirement from the chair of French in 1916 Professor Squair has worked constantly and

published much valuable work in connection with the study of French and the history of various phases of the life of the Province of Ontario. His genial presence will be much missed by the older members of the university staff and the sympathy of the University goes out to Mrs. Squair and his daughter. The many friends of Professor J. T. Crawford were greatly shocked when the news came in July of his sudden death at Innsbruck while he was travelling during the summer through Europe with his wife and family. He was one of the best teachers of mathematics in the province, and filled the chair of methods in mathematics in the Ontario College of Education with great satisfaction to his students and the University. His colleagues will long cherish his memory as a warm friend and their sympathy goes out to his wife and family.

The following retired:

Maurice Hutton, M.A., Oxon., LL.D., Professor of Greek and Principal of University College; George McKinnon Wrong, M.A., LL.D., McGill, Professor of History; Samuel Walter Perry, B.A., Lecturer in Art and Commercial Work, Ontario College of Education.

At the close of the academic year Maurice Hutton retired from his active duties as Principal of and Professor of Greek in University College, having held the latter position since 1880, and the former since 1901. One of the most distinguished figures in the history of the university now enters the ranks of the *emeriti*, but we hope that for many years he will be spared as a beloved member of the university society and continue to delight and instruct audiences of the province by his lectures. This is not the place to estimate his contribution to the life of the university, suffice it to say that he has been the most powerful single influence in bringing the classical standards of the university to the eminent position which they admittedly occupy. His distinction of mind and character has set forth the ideals of Greek thought which he interpreted in his own original way to many generations of admiring students, some of whom are among the leaders of Canada.

George MacKinnon Wrong has retired from the department of history in the university in which he has occupied with high distinction first the position of lecturer from 1892-1895, and since then of professor and head of the department. An excellent teacher, devoted to the welfare of his students, he was held in great respect by successive classes. He brought the study of history to an outstanding place in the university, and by his many publications and his encouragement of younger scholars he became an acknowledged authority in his subject in this country and abroad. His colleagues much regret his retirement.

Samuel Walter Perry was one of the first members of the staff of the Faculty of Education and during the twenty-one years in which he occupied his position as instructor in the methods of teaching art he won the highest regard of his students, and his work was greatly appreciated by the Dean of the faculty and the Department of Education. Retiring on account of having reached the age limit he carries with him the warm esteem of his colleagues.

The following resigned their positions:

Leslie Charles Coleman, B.A., professor of plant pathology; Joseph Horace Faull, B.A., Ph.D., Harvard, professor of botany; James Wesley Ingram, D.D.S., professor of dental anatomy; John James Rickard Macleod, M.B., Ch.B., Aberdeen, D.P.H., Cantab., D.Sc., professor of physiology; David Duff, M.A., B.D., Edin., associate professor of Latin; William Goldie, M.B., associate professor of clinical medicine; Frederick Adam Cleland, B.A., M.B., assistant professor of obstetrics and gynaecology; David King Smith, M.B., assistant professor of medicine and clinical medicine; John Gordon Gallie, B.A., M.B., associate, obstetrics and gynaecology; Healey Willan, Mus. Doc., lecturer, theory of music.

The resignations of these gentlemen have been received with regret by the university but with gratitude for the services they have rendered.

Professor J. J. R. Macleod resigned the chair of physiology to accept the same chair, at the call of his *alma mater*, in the University of Aberdeen. He has left amid the deep regret of this university to which for ten years he devoted his conspicuous abilities with increasing energy and brought much prestige, having been one of the leaders in the development of medical education and research so manifest in recent years. He takes with him our gratitude and best wishes.

Harvard University having offered Dr. Faull a chair of research with less burdensome duties than in Toronto, to our great regret he left us after twenty-six years here of excellent and enduring work. He was appointed lecturer in 1902, and professor and head of the department in 1918.

Professor David Duff resigned his position in order to return to Edinburgh. For the fourteen years in which he has been on the staff of University College he has done valuable work as a teacher, and has won the regard of his colleagues for his high qualities as a scholar and a gentleman.

Leave of absence was granted to the following:

James Alfred Dale, M.A., Oxon., professor and director of the department of Social Service, on account of illness; William Jackman, M.A., professor of rural economics, on account of illness; Herbert Sutherland McKellar, B.A., associate professor of French, for the Easter Term to study abroad; Robert Boyd Thomson, B.A., professor of phanerogamic botany, for the Michaelmas Term, to attend the International Scientific Council of Agriculture in Rome; Humphrey Hume Wrong, B.A., Tor., Oxon., B.Litt., Oxon., assistant professor of history, to perform the duties of first secretary of the Canadian Legation at Washington.

The following new appointments and promotions were made during the year:

In the Faculty of Arts—Appointments:—Frank Hawkins Underhill, B.A., professor of history; Edward Johns Urwick, M.A., Oxon., professor of political economy; William Stewart Wallace, M.A., professor of history; Dixon Lloyd Bailey, B.A., Queen's, M.S., Ph.D., Minn., associate professor of plant pathology; Henry Reid MacCallum, B.A., Queen's, Oxon., assistant professor of philosophy; Francis Gordon Bennett, B.A., Cantab., lecturer in Latin; Miss Ruth Cary, B.A., Lond., lecturer in Latin; Donald Grant Creighton, B.A., Tor., Oxon., lecturer in history; William Kenneth Gibb, B.Com., lecturer in political economy; John Henry Iliffe, M.A., Cantab., lecturer in archaeology; Frederick Reginald Lorriman, M.A., Ph.D., lecturer in chemistry; Miss Adelaide Helen Grant Macdonald, M.A., lecturer in law and political institutions; Miss Marion Squair, M.A., lecturer in French; Miss Helen Maud Wickware, B.A., lecturer in Italian and Spanish.

Promotions:—Ralph Flenley, M.A., Liverpool, B.Litt., Oxon., from an associate-professorship to a professorship in history; George Malcolm Smith, B.A., Tor., M.A., Oxon., from an associate-professorship to a professorship in history; Archibald Gowanlock Huntsman, B.A., M.B., from an associate-professorship to a professorship in marine biology; Gilbert Edward Jackson, B.A., Cantab., from an associate-professorship to a professorship in political economy; Wilhelm Ernst Blatz, M.A., M.B., Ph.D., Chicago, from an assistant-professorship to an associate-professorship in psychology; Earle Douglas MacPhee, M.A., B.Ed., Edin., from an assistant-professorship to an associate-professorship in psychology; Herbert Sutherland McKellar, B.A., from an assistant-professorship to an associate-professorship in French; Vincent Wheeler Bladen, M.A., Oxon., from a lectureship to an assistant-professorship in political economy; Alexander

Brady, B.A., Oxon., M.A., Ph.D., Tor., from a lectureship to an assistant-professorship in political economy; George Williams Brown, M.A., Ph.D., Chicago, from a lectureship to an assistant-professorship in history; Lester Bowles Pearson, B.A., Tor., Oxon., from a lectureship to an assistant-professorship in history; Arthur Francis Chesterfield Stevenson, B.A., Cantab., from a lectureship to an assistant-professorship in mathematics.

In the Faculty of Medicine—Appointments:—Lawrence Irving, A.B., Bowdoin, A.M., Harvard, Ph.D., Stanford, associate professor of physiology; Emerson James Trow, M.B., assistant professor of medicine and clinical medicine; Roscoe Reid Graham, M.B., associate in surgery and clinical surgery; Malcolm McLachlan Crawford, M.B., associate in medical jurisprudence.

Promotions:—Donald Thomas Fraser, B.A., M.B., D.P.H., from an assistant-professorship to an associate-professorship in hygiene and preventive medicine; Julian Derwent Loudon, B.A., M.B., from an associateship to an assistant-professorship in medicine and clinical medicine; George Ewart Wilson, M.B., F.R.C.S., from an associateship to an assistant-professorship in surgery and clinical surgery.

In the Faculty of Applied Science—Appointment:—Victor George Smith, B.A.Sc., lecturer in electrical engineering.

Promotions:—Eric Ross Arthur, M.A., B.Arch., Liverpool, from an assistant-professorship to an associate-professorship in architecture; Henry Harrison Madill, B.A.Sc., from an assistant-professorship to an associate-professorship in architecture; Frederick Charles Dyer, B.A.Sc., from an assistant-professorship, to an associate-professorship in mining engineering; James Thomas King, B.A.Sc., from an assistant-professorship to an associate-professorship in mining engineering; William James Smither, B.A.Sc., from an assistant-professorship to an associate-professorship in structural engineering; Walter Scott Guest, B.A.Sc., from a lectureship to an assistant-professorship in electrical engineering; John Waller Melson, B.A.Sc., from a lectureship to an assistant-professorship in surveying and geodesy.

In the Faculty of Household Science—Appointment:—Miss Edna Wilhelmine Park, M.A., lecturer in household science.

In the Faculty of Forestry—Appointment:—Robert Christie Hosie, B.Sc.F., lecturer in forestry.

Promotion:—James Herbert White, M.A., B.Sc.F., Ph.D., from an associate-professorship to a professorship in forestry.

In the Faculty of Music—Appointments:—Ernest MacMillan, B.A., Tor. Mus. Doc. Oxon., dean; Leo Smith, Mus. Bac., lecturer in theory of music.

In the Faculty of Dentistry—Promotions:—Stanley Stuart Crouch, D.D.S., from an associateship to a professorship in dental anatomy; Charles Alvin Snell, D.D.S., from an associateship to an associate-professorship in periodontology.

In the Ontario College of Education—Appointment:—Miss Winifred Glen Barnstead, B.A., Dalhousie, director, library school.

Promotions:—John Thomas Crawford, B.A., from an associate-professorship to a professorship in methods in mathematics; John Oliver Carlisle, M.A., from an assistant-professorship to an associate-professorship in methods in classics; Walter Ernest Macpherson, B.A., LL.B., Queen's, from an assistant-professorship to an associate-professorship in education; Miss Laura Lavinia Ockley, B.A., from an assistant-professorship to an associate-professorship in household science; Miss Alicia Enid Robertson from an instructorship to a lectureship in household science.

The total number of students registered in the university in 1927-1928 was 5,986, distributed as follows:

				Men	Women	Total
Faculty of Arts				1,670	1,374	3,044
University of Toronto	328	200	528			
University College	732	583	1,315			
Victoria College	366	367	733			
Trinity College	123	118	241			
St. Michael's College	137	121	258			
Registered twice	16	15	31			
Faculty of Medicine				684	72	756
Faculty of Applied Science and Engineering				546	4	550
Faculty of Household Science				..	131	131
Ontario College of Education				199	210	409
Faculty of Forestry				58	..	58
Faculty of Music				18	19	37
School of Graduate Studies				287	123	410
Faculty of Dentistry				264	20	284
Department of Social Service				10	92	102
Department of Public Health Nursing				..	240	240
University Extension (Occupational Therapy)				..	40	40
Registered twice				49	26	75
				3,687	2,299	5,986

The figures may be further analysed as follows:

FACULTY OF ARTS

University of Toronto

	Men	Women	Total
Teachers' Courses and Summer Session	193	167	360
Occasional Arts students	135	33	166
	328	200	528

University College

	Men	Women	Total
First year undergraduates	254	184	438
Second year undergraduates	195	144	339
Third year undergraduates	140	127	267
Fourth year undergraduates	129	111	240
Occasional students	14	17	31
	732	583	1,315

Victoria College

	Men	Women	Total
First year undergraduates	109	105	214
Second year undergraduates	124	105	229
Third year undergraduates	77	84	161
Fourth year undergraduates	54	71	125
Occasional students	2	2	4
	366	367	733

Trinity College

	Men	Women	Total
First year undergraduates	42	43	85
Second year undergraduates	41	34	75
Third year undergraduates	20	26	46
Fourth year undergraduates	15	14	29
Occasional students	5	1	6
	123	118	241

St. Michael's College

	Men	Women	Totgl
First year undergraduates	58	35	93
Second year undergraduates	36	32	68
Third year undergraduates	21	24	45
Fourth year undergraduates	20	27	47
Occasional students	2	3	5
	137	121	258

FACULTY OF MEDICINE

	Men	Women	Total
First year undergraduates	106	11	117
Second year undergraduates	121	13	134
Third year undergraduates	136	10	146
Fourth year undergraduates	100	17	117
Fifth year undergraduates	99	10	109
Sixth year undergraduates	100	8	108
Candidates for Degree of B.Sc. (Med)	7	..	7
Candidates for D.P.H.	6	1	7
Post Graduate students	8	1	9
Occasional students	1	1	2
	684	72	756

FACULTY OF APPLIED SCIENCE AND ENGINEERING

	Men	Women	Total
First year undergraduates	190	2	192
Second year undergraduates	148	1	149
Third year undergraduates	109	..	109
Fourth year undergraduates	99	1	100
	546	4	550

FACULTY OF HOUSEHOLD SCIENCE

	Men	Women	Total
First year undergraduates	..	48	48
Second year undergraduates	..	34	34
Third year undergraduates	..	30	30
Fourth year undergraduates	..	17	17
Occasional students	..	2	2
	..	131	131

ONTARIO COLLEGE OF EDUCATION

	Men	Women	Total
Students in attendance	78	161	239
Extra-mural students	37	33	70
Students in B.Paed. course	84	16	100
	199	210	409

FACULTY OF FORESTRY

	Men	Women	Total
First year undergraduates	24	..	24
Second year undergraduates	15	..	15
Third year undergraduates	9	..	9
Fourth year undergraduates	10	..	10
	58	..	58

FACULTY OF MUSIC

	Men	Women	Total
First year undergraduates	5	8	13
Second year undergraduates	3	3	6
Third year undergraduates	6	7	13
Occasional students	2	1	3
Candidates for Mus. Doc. degree	2	..	2
	18	19	37

SCHOOL OF GRADUATE STUDIES

	Men	Women	Total
Candidates for Ph.D	72	19	91
Candidates for M.A.	102	46	148
Candidates for M.D.	1	....	1
Candidates for M.A.Sc.	3	....	3
Candidates for C.E.	3	....	3
Candidates for M.E.	1	....	1
Candidates for E.E.	1	....	1
Candidates for D.Paed.	57	7	64
Candidates for M.S.A.	9	....	9
Graduate students	38	51	89
	287	123	410

FACULTY OF DENTISTRY

	Men	Women	Total
First year undergraduates	24	....	24
Second year undergraduates	55	2	57
Third year undergraduates	61	....	61
Fourth year undergraduates	53	1	54
Fifth year undergraduates	60	....	60
Candidates for the Degree of B.Sc. (Dent)	9	1	10
Occasional students	2	....	2
Occasional students (Dental Nurses)	....	16	16
	264	20	284

DEPARTMENT OF SOCIAL SERVICE

	Men	Women	Total
First year full-time students	2	17	19
Second year full-time students	1	16	17
Part-time students	7	59	66
	10	92	102

DEPARTMENT OF PUBLIC HEALTH NURSING

	Men	Women	Total
Full-time students	....	53	53
Part-time students	....	187	187
	....	240	240

The numbers examined in the different departments of the University, including those persons granted standing for military service, were as follows:

Arts:		
Fourth Year	439	
Third Year	512	
Second Year	760	
First Year	895	
Teachers' Course	285	
Graduates (Specialist Standing)	64	
		2,955
Medicine:		
Sixth Year	107	
Fifth Year	109	
Fourth Year	117	
Third Year	122	
Second Year	109	
First Year	112	
D.P.H.	5	
B.Sc. (Med)	5	
		686

Applied Science and Engineering:		
Fourth Year	99	
Third Year	105	
Second Year	148	
First Year	184	
		536
Household Science		127
Education		363
Forestry		58
Music		32
Graduate Studies		336
Dentistry		283
Social Service		75
Public Health Nursing		53
Law		12
Pharmacy		110
Agriculture		40
Veterinary Science		19
Local Examinations in Music		19,718

The degrees conferred were:

	Men	Women	Total
LL.D. (Honorary)	9	1	10
D.Litt. "	6	....	6
D.Sc. "	5	2	7
D.Eng. "	3	....	3
Ph.D.	15	3	18
M.A.	68	22	90
M.D.	87	11	98
M.A.Sc.	1	....	1
Mus. Doc.	1	....	1
M.E.	1	....	1
E.E.	1	....	1
D.Paed	3	....	3
M.S.A.	3	....	3
B.A.	207	210	417
B.Comm	25	2	27
M.B.	31	1	32
B.Sc. (Med)	6	....	6
B.A.Sc.	82	....	82
B.Arch	7	....	7
B.H.Sc.	....	17	17
B.Paed	19	2	21
B.Sc.F.	10	....	10
Mus. Bac.	2	....	2
LL.B.	1	1	2
D.D.S.	58	....	58
B.Sc. (Dent)	4	1	5
B.S.A.	36	....	36
B.V.Sc.	17	1	18
Phm.B.	13	2	15
	721	276	997

The number of regular students in attendance at the university was 5511, as compared with 5025 last year. This is an increase of 486 over the preceding year.

In addition to the students in the regular courses at least 3160 have been receiving instruction provided by the university through its extension department in evening classes held in Toronto, Hamilton, St. Catharines, Fort William, Windsor, and Brantford.

The progress of the teaching and research departments of the university is outlined in the appended reports. I am happy to be able to say that they indicate that the work of the year has been most satisfactory. Attention may be called to a very few of the features of the reports which I have received from the staff.

The department of psychology under Dr. Bott and his associates has been during the last few years attracting the attention of psychologists in the United

States, and has been greatly widening its interests through the help of the Laura Spelman Rockefeller Memorial for Child Research, and of Canadian institutions which have come to realise the aid that psychology may render to them in the choice of personnel.

The faculty of applied science has arranged for a course in aeronautics under the direction of Professor Parkin, whose researches in the problems of this field have been favourably received. In the immediate future the number of students may not be large, but Canada is bound to offer opportunity in this department of activity, and young men will turn to this branch of engineering who in former years would have entered other courses.

The call for foresters in government employment is increasing, especially for men to investigate the possibilities for pulpwood in the northern burnt over tracts, and in the pulp and paper industries.

In the faculty of dentistry the standards of entrance have been raised to conform to those of McGill and the leading American universities. This has been one material cause in the reduction of the numbers of the first year, but another major cause is the widespread opinion in the profession of the province that there is a superabundance of practising dentists by reason of the large classes which completed their courses in the years after the war. In order, however, to meet the needs of the province there should be on the average an incoming class of sixty.

The rapid growth of the school of graduate studies is most gratifying. There were 121 students in attendance holding degrees from other universities of Canada, and 10 from other parts of the Empire. The wide area from which students come is a proof that the school is meeting a real need in this country at a time when our national development is calling loudly for more well trained scientists.

The establishment through the leadership of the Honourable G. H. Ferguson of the research foundation for Ontario has awakened much interest in the university. Already for some years the research activities of the staff have been developing with vigour, and as shown in this annual report even during the past year excellent results have been obtained. Therefore those who direct the new research foundation may be assured of the heartiest co-operation that the university can give in contributing to its success. Its establishment holds forth the promise of retaining many of our well trained graduates to build up our own country, and the rapid growth of our postgraduate school indicates that there should be no lack of persons ready to devote their talents to the field of research.

The extension work of the university has grown with great rapidity in all its branches, and under this department the effort is made to test out emerging educational needs, so that without undue loss such as may require permanent provision will be carefully selected in process of time.

In the department of public health nursing the first year of a new course was begun whereby nurses who look forward to work of this character will take a year at the university, and thereafter two years of practical work at a hospital, concluding with a final year at the university. Also arrangements have been completed for beginning in the session 1928-1929 a new course, to be conducted under the extension department, for preparing graduate nurses for teaching and administrative posts in their profession.

The continued ill-health of Professor J. A. Dale is greatly to be regretted, but I wish to express my thanks to Professor E. J. Urwick for the generous way in which he undertook the extra burden of supervising the department of social service in the absence of the director.

The physical health of the students has been excellent, as is evident from the reports of Dr. Porter and Dr. Edith Gordon. Also, the record of sport is one of successful activities such as might be expected from students in the best of condition. Fortunately we have been able to provide better temporary quarters

for the women's health department, and it is to be hoped that some of the oppressive difficulties under which Dr. Gordon has done her work hitherto will be lessened. The building for the physical training of women which has been so long needed is still urgently required.

Each year Hart House under the direction of Mr. Bickersteth and his faithful staff has become a greater boon to the men students of the university. The preceding summer was a particularly heavy one because of the large number of visiting bodies, with more or less academic affinity, which came to Toronto and were entertained at Hart House by their hosts. Such a burden is thrown upon the staff of the house during the summer by these visiting societies, that it may be necessary for the Governors to limit the number which may be granted the privileges of entertainment in any one year.

The cultivation of music in Hart House has been developing so successfully, chiefly because of the generous co-operation of many of the leading artists of the city, that those interested in music are strongly of opinion that a permanent director of music would be able to discover and develop a great deal of latent power in the undergraduate body of men and women, and give music a place in the university which would mean much for the cultural life of this country.

Among other important developments which should be made in the university, in addition to the chair of Fine Arts to which reference was made in my last report, is the assignment of a definite place to the teaching of and research in geography. This vast country has been the scene of historic explorations and of important movements of peoples. The Geological Survey of Ottawa has done scientific work of the first order, and the commercial connections of the Dominion with almost every part of the world are being made with remarkable rapidity. In the universities of Great Britain and Europe the importance of geography has long been recognised, but on this continent it is only recently that provision has been made for it in leading institutions. In Canada no such department on any sufficient scale has yet been created. It is hoped that it will be found possible to take steps in this direction before long.

The question has often been raised why many of those who receive standing at the end of their first year in arts do not enter upon the work of the second year. It is at this stage that most leave the university because evidence of insufficient preparation for their courses has then become manifest. Of those qualified to return after the examinations of May 1927 thirty-eight did not register in the session 1927-28. I find in response to a circular which I sent to each asking for information, that about half of those who answered did not complete their courses for financial reasons, but that several hope to resume their studies. One did not return because of an accident, a few changed their residence, others went to permanent occupations, a very small number expressed disappointment with what they got from their courses. It is evident that the time honoured struggle to secure an education still exists, and that in spite of our per capita wealth in Canada many a student, as in the past, finds himself handicapped through lack of funds. In all the faculties the majority of students contribute something to their own support, and many struggle hard to get an education. This spirit means much for the welfare of the university as a whole. Any university is glad to help worthy students as far as it is within its power, and welcomes benefactions which make grants and loans possible. Many a good student loses valuable time in winter and in summer by the drudgery which he finds it necessary to undergo in order to earn his livelihood. It is therefore gratifying that in the past few years friends of the university recognising this need have contributed for new scholarships and fellowships, which almost certainly will bear good returns through the greater freedom that they will make possible for intellectual work. Occasionally fears have been expressed, usually perhaps by the well-to-do who are able to support their own sons and daughters, that loss of self-respect may result through the distribution of free scholarships. It is interesting, therefore, to read in a recent

report of the Carnegie Trust, which has now for many years been paying the fees of needy students in the Scottish universities, that last year there were 836 men and 568 women beneficiaries in Edinburgh University. Further the report states that "the utmost care is taken to prevent abuse by applicants of the Funds of the Trust. Each case is considered on its merits. The parent or guardian is required to furnish a confidential statement giving full details of the financial circumstances of the family. The Chairman of the Trustees, Lord Sands, in presenting the Report stated that out of every 100 matriculated students in the Scottish Universities 44 are eligible for Carnegie grants, that only 7.5 per cent. of the new beneficiaries last year were the children of parents who have an income exceeding the equivalent of £250 on a pre-war standard, and that 55 per cent. of the parents have incomes of less than the equivalent of £130 on the same standard. . . . The figures show that repayments are greatly increasing."

The Registrar has furnished the following report on the occupation of the parents of students who entered the university in 1927:

	Arts	Med.	Applied Science	H.Sc.	For.	Dent.	Total
Professions:							
Architecture	5	—	—	—	—	—	5
Art	4	—	1	—	—	—	5
Dentistry	7	2	2	2	—	3	16
Ministry	65	3	3	3	1	1	76
Engineering	17	4	6	1	—	—	28
Journalism	16	2	1	1	1	—	21
Law	38	2	2	2	—	—	44
Medicine	32	16	7	3	—	2	60
Pedagogy	34	3	13	1	2	—	53
Pharmacy	14	1	1	2	—	1	19
Business:							
Wholesale	22	4	1	1	1	1	30
Retail	97	17	20	7	1	6	148
Financial	23	2	2	1	1	—	29
Insurance & Real Est	29	3	5	2	—	1	40
Clerks, Salesmen, etc	84	10	23	7	4	3	131
Business Managers	30	3	14	2	1	1	51
Industries:							
Agriculture	92	14	26	1	3	3	139
Artisans	86	17	26	3	3	3	138
Contractors	16	4	3	1	2	—	26
Lumbering	4	—	1	1	—	—	6
Manufacturing	61	6	7	5	1	1	81
Transportation	35	5	8	—	—	—	48
Officials:							
Dominion	11	2	1	2	—	—	16
Provincial	8	1	1	1	—	—	11
Municipal	7	1	2	—	—	—	10
Miscellaneous:	23	—	6	—	1	1	31
Retired	25	3	6	1	—	1	36
Deceased	76	4	12	4	1	1	98
Not Specified	10	1	2	1	2	1	17
Total	971	130	202	55	25	30	1,413

An analysis of these figures has been made for me by Professor H. R. Kemp with a view to comparing numbers with the totals of each occupational class in Ontario. His results, however, have been less satisfactory than they might have been had the Dominion statistics of 1921 been available, and on the publication of the classification of the last census more accurate information will be obtainable

on the basis of an average of the last five years. Meantime, it is obvious that far more students proportionately come to the university from professional homes than from those whose heads are in business or the industries including agriculture. The professions also stand remarkably close to one another in the ratio of their sons and daughters who are in attendance. The university reflects the changing social conditions of the province, and the relative position of agriculture and other industries, as compared with what it used to be, is very evident from these statistics. As a result the development of the university shows itself not so much in an increase of numbers, as in the provision for new courses of instruction arising out of the more complicated structure of modern society. Specialised functions in the older professions and newer vocations make incessant demands which account for the rising costs of education.

Reference was made in my last report to the preparations undertaken for the celebration of the centenary of the granting of the Royal Charter to King's College in 1827. The proceedings began on October 6th, and continued to the 10th, and were by common consent highly successful. By delegate, address, or message more than 250 universities and learned societies were represented, over 2000 graduates were present, the students of the university co-operated enthusiastically, and throughout there was manifest a feeling of great goodwill. The underlying affection of alumni and students for their *alma mater* was shown as probably never before. Fortunately, the weather was excellent on the occasions when sunshine was needed for processions, receptions and games. The variety of the programme added to the interest, the presence of outstanding figures in the public life of the Dominion, and of distinguished scholars and scientists from abroad, and the warmth of the congratulations received from the universities of the world were most gratifying. The university, having been accorded this sincere recognition, has addressed herself with renewed confidence to her work for this province and the people of Canada.

Concurrently with the celebration of the general centenary the fiftieth anniversary of the creation of the School of Practical Science was emphasised by various proceedings participated in chiefly by graduates of the faculty of applied science, who returned for the occasion in large numbers evincing as usual their loyalty for and interest in the old "school".

A most successful conference of persons interested in the investigation of colloids met at the university in the middle of June. Doubtless the attendance was augmented by the announcement that Sir William Hardy of Cambridge would be present.

After very careful consideration it was decided, in order to meet the plans of the Toronto General Hospital, to remove the pathological building of the university to a site on the north side of College Street opposite the hospital. In this building there will be included beside pathology and pathological chemistry, research laboratories for the clinical departments, and accommodation for Dr. Banting and his work in medical research. The new position is the best that could have been chosen, and the grouping of these related departments in one building means much for the medical development of the university.

During the session the following special lectures were delivered:

By visitors to the centenary celebrations as follows: Dr. R. W. Livingstone, Vice-Chancellor of the Queen's University of Belfast: "The place of poetry in education and life", "What poetry is", "On judging poetry", "The poet as moralist" (Virgil), "The poet as artist" (Virgil), "Poetry for poetry's sake" (Sophocles); Dr. J. C. Smith, Chief Superintendent of Education for Scotland, at the Ontario College of Education "Education in Scotland".

A course of twelve lectures on "The Ethnological Background of Asiatic History", by Sir Bertram Windle, F.R.S., special lecturer in ethnology in the University of Toronto; two lectures on "Czechoslovakia" and "Karst Phenomena", by Dr. Jiri V. Danes, professor of geography at Charles University,

Prague; two lectures on "Atoms, Molecules and Chemical Combination" and "Atomic and Molecular Physics" by Professor J. Franck, director of the physical laboratory, University of Göttingen; two lectures on "The natural chemical Stimuli affecting the Motility of the alimentary Canal" and "The Innervation of the salivary Glands", by Dr. Boris Babkin, research professor of experimental medicine, McGill University; a lecture on "Causality in modern Science", by Professor H. A. Kramers, of Rijks-University, Utrecht; two lectures on "The mystery Religions", by Professor S. Angus of St. Andrew's College, Sydney, Australia; a lecture on "Charles Dickens", by Professor Wilhelm Debelius of the University of Berlin; a lecture on "Unity of Mediaeval Civilisation", by Professor T. F. Tout of the University of Manchester; a lecture on "The Government of a British Colony", by Sir Gordon Guggisberg, Governor of the Gold Coast Colony.

Nine stimulating lectures with discussions were given in connection with the department of physics by the distinguished head of the physical laboratory of the University of Utrecht, Holland, from April 23 to May 9. Professor Kramers dealt with general physical and mathematical ideas arising out of the most recent developments of physics.

Again I am glad to state that Dr. F. A. Mouré's fortnightly recitals on the organ in Convocation Hall have been most successful.

During the past year the university has received the following benefactions: From the Rockefeller Foundation for the School of Hygiene, $250,000; Eaton Endowment (annual payment), $25,000; Alexander Lectureship Committee, $14,368.53; Mrs. Jessie M. Stewart, for John A. Stewart Research Fund, $10,000; Laura Spelman Rockefeller Memorial for Child Research, $10,000; Graduate Fellowships: Imperial Oil Limited, $500; Sir Edward Kemp, $500; Robert Simpson Company Limited, $500; Colonel R. W. Leonard, $500; Canadian Pacific Railway, $1,500; Canadian National Clay Products, for Ceramics Lectureship, $3,000; George H. Armstrong, Scholarship in History, $2,250; E. R. Peacock, Esq., and Sir Joseph Flavelle, Bart., for Flavelle-Peacock Lectureship, $1,250 each; Maurice Cody Memorial Scholarships, $1,000; Scholarship in Mathematics, anonymous, $800; Robert Bruce Scholarship, $461.21; Sir Edmund Walker Scholarship, $450; for Faculty of Dentistry, Joseph Errington, Esq., $1000, Canadian Dental Research Foundation, $300, Ontario Dental Association, $250, Ash-Temple Company Limited, $250, F. J. Ross, Esq., $150; Boiler Inspection and Insurance Company Scholarship, $1,950; Toronto Brick Company Scholarship, $150; For University of Toronto Schools scholarships, The T. Eaton Company, $120, Hon. N. W. Rowell, $100; Darling and Pearson Prize in Architecture, $100; T. H. Barton, Esq., for Jardine Memorial Prize, English Verse, $100; Delta Phi Epsilon Scholarship, $100; McCaul Scholarship in Classics: Principal M. Hutton, $25, George H. Fraser, Esq., $25, A. M. Stewart, Esq., K.C., $25; Squair French Library Fund, $276.15; Dr. R. A. Reeve Prize, $50; British Association Advancement Science fund, $34; Professor F. Tracy, prize in ethics, $20; University College Alumnae, prize in English, $10; Coleman Portrait Fund Committee, $7.06.

Sir R. Leicester Harmsworth, Bart. of London, England, presented to the university a valuable portrait of John Burridge Chadwick, Archdeacon Andrew and General John Graves Simcoe, together with a collection of books from General Simcoe's library. This gift is of great historical interest to this university. The portrait now hangs in Simcoe Hall.

I take much pleasure in commending the faithful and efficient work, so essential to the wellbeing of this immense and complicated institution, that is being done by the staffs of the offices throughout the university.

All of which is respectfully submitted,

R. A. Falconer,
President.

October 25, 1928.

APPENDIX A

(1) Report of the Principal of University College.
(2) Report of the Dean of the Faculty of Medicine.
(3) Report of the Dean of the Faculty of Applied Science and Engineering.
(4) Report of the Dean of the Ontario College of Education.
(5) Report of the Dean of the Faculty of Forestry.
(6) Report of the Dean of the Faculty of Music.
(7) Report of the Dean of the School of Graduate Studies.
(8) Report of the Dean of the Faculty of Dentistry.
(9) Report of the Director of the School of Hygiene.
(10) Report on Research.
(11) Publications.
(12) Report of the Librarian.
(13) Report of the Director of the Department of Social Service.
(14) Report of the Director of the Department of Public Health Nursing.
(15) Report of the Department of University Extension and Publicity.
(16) Report of the Director of the Department of Military Studies.
(17) Report of Health Services.
(18) Report of the Warden of Hart House.
(19) Report of the Director of the Connaught Laboratories.
(20) Statement regarding the Biological Museum.
(21) Statement regarding the Museum of Geology.
(22) Statement regarding the Museum of Palaeontology.
(23) Statement regarding the Museum of Mineralogy.
(24) Statement regarding the Museum of Archaeology.

(1) REPORT OF THE PRINCIPAL OF UNIVERSITY COLLEGE

(*Professor Maurice Hutton*)

This is presumably the last report I shall make on the fortunes of University College during the session.

It is a happy omen for my successor, and not perhaps wholly accidental, that this last report should also be unperturbed and unperturbing. Twelve generations of students have shown to me great forbearance and consideration during the last forty-eight years: it was only to be expected perhaps that the last of the twelve should seek to preserve the *bonne entente*, and to take an amicable leave of me, a disappearing generation of a superannuated professor.

However that may be, the only occasion I can recollect during the past session when we have not precisely seen eye to eye was an incident of slight account. On the occasion of the elections of the Literary and Athletic Society it was suggested to me that it might have an auspicious and academic propriety, if an organ-grinder and a monkey patrolled our corridors for a few minutes between lectures: the monkey would have a scientific significance and contribute a link at present missing between the large body of our students who do not take the bulk of their lectures in University College, and the humanists who do; the organ-grinder's melodies would appeal to the human instincts of all alike, without regard to the gulf between the natural sciences and humanism. I could not measure academic propriety by the same broad standards, and in consequence the monkey-man and monkey—the missing link—did not parade.

But the disappointment was borne stoically, or better, in a Christian spirit, by the student body, and a final record added to the long list of their achievements of self-conquest, in respect of student high spirits, and of forbearance towards Victorian scruples.

This same session, it so happens, has also synchronised with an improvement in the classical standards of the classical honour classes,—although the lamentable policy of the School Board of Toronto, which still excludes Greek from all the Institutes of this metropolitan city except two, one of which is now losing its classical principal, Mr. Hagarty, to whom this college is much indebted, has not yet been withdrawn.

That the classical standard has thus risen must be ascribed in part—and here I come to the chief disappointment and regret which mars the otherwise unalloyed peace and satisfaction with which I contemplate the long tenure of office which I have enjoyed, a tenure which added to that of my predecessor covers the unexampled period of well nigh a century, eighty-six years to be precise—to the faithful work of my colleague and friend, Professor David Duff, now, alas! returning to his native Edinburgh. Professor Duff has been far more than a faithful and unremitting teacher of the most disciplinary subject of the arts' course, Latin. He has been, what no teaching, however faithful and unremitting, necessarily guarantees, a professor inspiring and most popular: one able to develop a subject of first rate mental discipline, till it also became most interesting, most entertaining and most welcome. For nearly twenty years, thanks to the insight and rare judgment of men exhibited by my deeply regretted colleague John Fletcher, University College has enjoyed the advantage of Professor Duff's vivacity, vitality and scholarship. His students, no less than his colleagues, and his colleagues no less than his students, will miss him sorely, and join with me in hoping that he will remember happily in his new, which is also his old home, the score of years which he passed with great advantage to us in Canada.

A university is a small Republic of Letters, and gains enormously—even as the whole world of to-day is gaining—by the admixture of men of all countries and origins, by the disappearance of narrow nationalisms, and the reconciliation of conflicting prejudices and of limited points of view. Scotland has added too much to the life of this college, whether through Scotsmen directly, or through Scotch-Canadians, through Sir Daniel Wilson, George Paxton Young, Ramsay Wright and David Duff, or through men like James Loudon and John Fletcher, for it to be necessary for me or any one to harp upon this familiar theme. Our President himself is an illustration sufficient.

(2) REPORT OF THE DEAN OF THE FACULTY OF MEDICINE

(Professor A. Primrose)

A number of important facts are to be recorded concerning various activities in the Faculty of Medicine during the session 1927-1928. The Senate of the University of Toronto, on the recommendation of the Faculty of Medicine, determined to grant the degree of M.D. to students on graduation instead of the M.B. It was further determined to bestow the doctor's degree in medicine upon any graduate in medicine of this university who may apply for it.

Arrangements have been completed for the erection of a large laboratory building on the north side of College Street, immediately opposite the Toronto General Hospital. This building will house the clinical departments, the departments of pathology and bacteriology, pathological chemistry and the laboratories of the Banting and Best chair of medical research. In addition it will contain the Dean's office and departmental libraries. It will be connected with the hospital by a tunnel under College Street. Large additions are at present under construction in connection with the Toronto General Hospital. The country hospital of the Hospital for Sick Children at Weston, mentioned in last year's report is now open.

The centenary of the University of Toronto which was celebrated from October 6 to 10, 1927, with such conspicuous success, brought many of our graduates together to do honour to their *alma mater*. Many distinguished men were guests on that occasion; in medicine these included in addition to those from foreign countries, Sir Charles Sherrington, Sir John Bland-Sutton, Sir John Broadbent, and two of our own graduates, Professor W. G. MacCallum of Balti-

more and Professor Thomas McCrae of Philadelphia. A noteworthy feature of the celebration was the dedication of a carillon of 23 bells in the Soldiers' Tower presented by the graduates in all faculties to the University.

We regret to record the resignation of one of the most distinguished members of the faculty of medicine in the person of Professor J. J. R. Macleod. He occupied the chair of physiology for ten years and now resigns to accept the regius professorship of physiology in the University of Aberdeen—his *alma mater*. During his tenure of office, as professor and associate dean, he took a leading part in the reorganisation of the medical curriculum, which resulted in the establishment of the present six year course. The subsequent success of that course is largely due to the enthusiastic interest he showed in its development. While maintaining an exceptionally high standard of teaching in his subject, inspiring many of his students to undertake advanced study, he exhibited extraordinary activity in the field of research, as evidenced by the wealth of published results from his laboratory. The part played in the history of insulin research compelled world-wide recognition. The award of the Nobel prize, the Cameron prize of the University of Edinburgh, and the Fellowship of the Royal Society brought well-merited honour to Professor Macleod and distinction to this university.

Professor Macleod had many interests besides those of his department. His departure will be deplored by many throughout the entire university. It will be most keenly felt by his colleagues and by the students in the faculty of medicine, not only because of his skill and resource as a leader in the scientific laboratories and in the lecture theatre, but because of the close ties of personal friendship which have united him to his fellows.

Professor J. C. McLennan, F.R.S., head of the department of physics, had the distinguished honour of being presented with the gold medal of the Royal Society for his researches regarding the composition of the upper atmosphere and concerning helium gas. Professor Klotz left Toronto in May on a second expedition to Lagos, West Africa, where he will spend six months, continuing research regarding the etiology of Yellow Fever. This work is being carried on under the aegis of the Rockefeller Foundation. We note with satisfaction that Dr. H. B. Maitland, a graduate of the university and formerly a member of our faculty, has been appointed professor of bacteriology and director of the department of public health in the University of Manchester, England.

On January 30th, 1928, fire broke out in the department of biochemistry in the medical building. Damage estimated to the extent of $50,000.00 resulted. Arrangements were made to continue teaching without interruption of classes: eventually repairs were completed, laboratories were refitted, and the work in teaching and research resumed as heretofore.

From time to time visitors from many countries come to us with the object of studying our methods of work in the faculty of medicine. In August 1927 a group of surgeons from the Royal Society of Medicine were our guests.

Lister day was celebrated on April 5th, 1928. On that occasion Dr. C. H. Mayo of Rochester, Minn., delivered the Donald Balfour Lecture in Convocation Hall to a large body of students, in the presence of numerous members of the faculty of medicine and of other faculties in the university.

Once more we have to acknowledge the continued benefit we derive from monies received from the Rockefeller Foundation and from the Eaton Endowment in medicine. The high grade of efficiency which has been attained in the clinical departments and in the department of public health and preventive medicine is largely due to the financial aid received from these sources.

Medicine:—No changes have been made in the organisation of the department of medicine, including the sub-department of paediatrics. Dr. William Goldie, associate professor of medicine has resigned to the extreme regret of his colleagues and of the many graduates who had the privilege of studying under his direction and inspiration. Other members of the teaching staff have resigned,

Dr. T. J. Page and Dr. Leonard Murray, the former because of ill health after nine years of faithful service, the latter because of an increasing amount of work as consultant to Christie Street Hospital and the Pension Board. Dr. G. H. Agnew has accepted the post of assistant secretary to the Canadian Medical Association and therefore relinquished his position as junior demonstrator in medicine.

Surgery:—The organisation of this department has not undergone any material change. The emergency department of the Toronto General Hospital has been linked up with the various surgical divisions. Dr. Roy Thomas has been appointed in charge of the emergency staff. Each of the three surgical divisions assume, with him, control of all emergency cases for a period of four months in rotation. This arrangement is regarded as of great importance in the training of the junior surgeons in each division. Increased facilities have been provided for the teaching of orthopaedic surgery and the surgical conditions of childhood in the Hospital for Sick Children.

Dr. Gordon Murray, F.R.C.S., after three years of post graduate work in London, was appointed resident in surgery in the Toronto General Hospital, and has rendered efficient service.

Bi-monthly meetings of the surgical staff of the General Hospital have been held and continued interest has been maintained in these gatherings. Clinical cases have been shown by members of the different divisions, some for conference as to diagnosis, others to demonstrate results of treatment. Autopsy reports have been presented by Dr. W. L. Robinson of the department of pathology and the tissues removed at operation have been studied in the gross and by means of microscopic sections. Many problems relating to the teaching of students have been considered. This series of meetings has been most inspiring and exceedingly helpful in correlating the work of the three divisions.

Obstetrics and gynaecology:—Throughout the session it has been possible to divide the class into smaller sections than formerly and teaching of a more effective character has been carried on with the different groups in the General Hospital, St. Michael's Hospital and the Western Hospital.

Research work in the toxaemias of pregnancy is still being carried on by Dr. Van Wyck in co-operation with the department of pathological chemistry, while some advances have been made in the study of puerperal infections by Dr. Dafoe, in co-operation with the Connaught Laboratories.

We regret to report the resignation of Dr. F. A. Cleland, assistant professor of obstetrics and gynaecology. He has performed faithful and efficient service since his appointment in 1922. We regret also that owing to illness Dr. F. W. Marlow, associate professor of gynaecology, has been unable to take any part in the work of the department.

The special departments of ophthalmology and oto-laryngology:—The work in these departments has been carried on as usual in the Toronto General Hospital and the Hospital for Sick Children. During the year Dr. A. E. MacDonald, research fellow in ophthalmology, has accomplished work in the study of pathological conditions of the eye of great value.

Therapeutics:—The routine work of teaching has been carried on as usual. Dr. A. G. Smith, research fellow, has continued investigations with sodium sulphocyanate, which promise to yield results of great clinical value.

Psychiatry:—The general plan of instruction, as instituted last year, and described in last year's report was adhered to during the past session. In the optional course of the fifth year Dr. Lewis covered the problem of mental deficiency and abnormality as illustrated by special cases in the public schools and special schools. Dr. Anderson gave lectures and demonstrations on the subject of juvenile delinquency and the functions of the juvenile court. Dr. Crawford gave demonstrations in the examination and treatment of neurosyphilis. Dr. McLarty dealt with psychiatric problems arising in general medical practice.

During the course the group visited the Ontario Hospital, Orillia, where methods of treatment and training of various types of mental deficiency were demonstrated.

Radiology:—The lecture demonstrations have been better organised and systematised. With an increasing amount of suitable material available, the subject can be illustrated from a great many different angles.

Anatomy:—There were registered in the various classes of the department of Anatomy 804 students. The work in gross anatomy for which 407 students were enrolled was conducted under the supervision of Professors Watt and Cates and Drs. H. G. Willson and H. A. Skinner. A course was given for the study on the living subject of surface anatomy and the outlining of important viscera by palpation, percussion and auscultation. This was supplemented by X-ray examinations conducted by Dr. M. J. Wilson.

The course in anatomy for dental students has been transferred from the dental college to the anatomy building, and is under the direction of Dr. Watt with the assistance of Dr. E. Montgomery.

The optional courses offered have been as follows:—1. The anatomy of the digestive tract, by Professor McMurrich and Dr. M. J. Wilson. 2. Physical anthropology, by Professors McMurrich, McIlwraith, Cates and FitzGerald. 3. The anatomy of the joints, by Professor Cates. 4. Section anatomy, by Professor McMurrich. 5. Special gross anatomy, by Professors Watt and Cates.

Courses in anatomy were given to students in occupational therapy by Professor Cates and Miss K. McMurrich.

In histology and embryology instruction was given by Professor Piersol and Dr. H. D. Ball, while Professor McMurrich gave a limited series of lectures in the course in embryology.

The technical assistant, H. LeMasurier, added nearly 3,000 microscopical preparations to the loan collection for students.

Optional courses have been offered in cytology by Professor Piersol and in embryology by Professor Coventry of the department of biology.

The courses in the anatomy of the nervous system have been conducted by Dr. Linell: in addition Dr. Linell offered an optional course of advanced studies in the nervous system and the sense organs.

During the session valuable additions have been made to the museum.

Physiology:—The most important change in the personnel of this department has been the appointment of Laurence Irving, Ph.D. Stanford, as associate professor, to fill the position vacated by Professor J. M. D. Olmsted who has gone to the University of California as head of the physiology department. Professor Irving has had an extended experience as an instructor in physiology at Leland Stanford University and has also done important research work concerning the physiology of muscular contraction.

Considerable reorganisation has taken place in the practical instruction for medical students, this having been made possible by the refurnishing of the practical class rooms. In the new arrangement there are 6 practical laboratories each equipped with movable tables for 24 students, this being much more satisfactory than the fixed chemical benches previously used. One of these tables is assigned to each two students. This allows the laboratories to be used for all types of experiments as well as for preparation of notes and for completion of other details of the practical work. The new arrangement has worked admirably during the present year and many of the students have taken advantage of the opportunities afforded for doing some extra work during spare hours. The number of medical students receiving instruction during the present year is 135. There have also been 21 honour arts students of the 4th year B. & M. course, 10 of whom have taken an advanced course in experimental physiology. During the 3rd year B. & M., a course in general physiology is given by Professor Irving the total number of students taking this course being 22.

While the above has formed the main teaching schedule of the department, courses have also been given by Professor Taylor to the dental students, a large part of this work being of a practical nature for which the newly equipped laboratories have proved very satisfactory. Didactic lecture courses have also been given to students of the school of household science, occupational therapy, public health nurses and students of optometry.

The fire which occurred in the top floor of the medical building in the end of January did not interfere with the teaching of the department.

Biochemistry:—The reorganisation of the laboratories for teaching and research, rendered possible by the transference of the department of hygiene to the new building, was barely completed when the fire of January 30th occurred. The teaching laboratories were untouched but there was a serious loss by research students of valuable records and materials.

The department returned this year to the plan of giving all the instruction in biochemistry during the third year of the medical curriculum. An improvement has been effected also in the timetable of the fourth year of the B. & M. course. All students of this course electing an option in biochemistry are able now to devote practically one entire day weekly to advanced laboratory work.

The department has continued to enjoy the co-operation and support of the department of zymology.

Pharmacy and pharmacology:—Teaching in this department has been most satisfactory. Dr. Lucas has had charge of the laboratory work both in pharmacy and pharmacology; he also delivered a special course of lectures on chemotherapy. Dr. McGonigle, the fellow and Dr. T. A. Sweet, the George Brown Memorial fellow have also been engaged in teaching, the latter with the dental class.

Pathology and bacteriology:—The department fully realises the position which it occupies in serving as a link between the basic laboratory sciences of the primary years, and the clinical departments in the final years. The responsibilities which thus devolve upon the department are very important, and every attempt is made to have the student appreciate that the training which he has received in his preliminary studies, must be properly applied to his succeeding studies. We are continuing to place the greatest emphasis in our instruction upon the fundamental principles governing pathology and bacteriology, and in the latter part of the course encouraging the student to apply these principles to the individual problems of diagnosis.

During the past year an improvement has been made in the instruction of the fifth year by allowing the student to obtain more contact with the fresh pathological material which is obtained from the operating room and from the autopsy.

Great difficulty is at present encountered because the limited facilities are not adequate to care for the number of students present in each class. It is anticipated that when the new laboratories are erected these difficulties will disappear.

During the past year five fellows have been carrying on research studies, and their work will be embodied in papers for publication. A number of these students are candidates for higher degrees.

We regret that during the past year we have lost from the department Dr. G. C. Cameron who has been lecturer in bacteriology. Dr. Cameron had been associated with this staff for a period of seven years and had charge of the diagnostic bacteriological laboratory. He has transferred his interests to the department of medical research, and will become associated with Dr. F. G. Banting in his researches.

The number of students applying for the opportunity of assisting in the laboratories, during the summer months is increasing each year. On account of the limited laboratory space available, we are forced to restrict the selection to a few, six in all. However, we also grant the opportunity to members of the

incoming 5th year to complete their attendance upon autopsies, during the summer months. Many take advantage of this opportunity.

The work of the students has improved very materially since each is in possession of his own microscope. The students utilise the microscope more widely and show an interest in their work beyond the classroom.

During the coming summer Professor Oskar Klotz will again join the Yellow Fever Commission of the Rockefeller Foundation, to study yellow fever on the West Coast of Africa.

Pathological chemistry:—General teaching in the department has continued with but minor changes. An optional tutorial class held during the Michaelmas term was attended by a large percentage of the fifth year. During the year, a new students' laboratory has been built in St. Michael's Hospital. It will be completely equipped next session and it is hoped its facilities will aid materially the teaching strength of this department.

Research has been continued by various members of the staff. The head of the department has continued his co-operative research with the department of obstetrics.

Hygiene and preventive medicine:—The department of hygiene and preventive medicine is now a unit in the school of hygiene, as well as being a department in the faculty of medicine. During the year the so-called sections of epidemiology and biometrics and physiological hygiene were created independent departments by the Governors of the University. These new departments provide an opportunity for the instruction of graduate students in medicine proceeding to the diploma in public health and in addition certain courses of didactic lectures for undergraduate students in the faculty of medicine.

Medical jurisprudence:—The usual course of lectures was delivered. During one of the periods K. H. Greer, K.C., at the request of Dr. Crawford, lectured to the students regarding the relationship between the activities of the legal and the medical profession. During the year groups of classes attended inquests at the city morgue in order that they might be familiarised with court procedure, and the proper conduct of a medical man as witness. This opportunity of attending inquests will be accorded to students in future by the associate-coroners of Toronto.

Graduate study:—Those who have studied abroad know that the routine method is for the graduate to attend the instruction given to the students of the senior years in medicine, to follow the ward rounds and to attend the out-patient department. The faculty has opened the courses of instruction given to the higher years in medicine to any one who cares to attend and refresh his knowledge in this way. A standing committee has been appointed whose duty it is to give any graduate interested, advice as to the clinics and lectures which should be taken and to confer with the heads of departments and individual teachers so as to arrange a course in advance for each applicant.

All the library facilities of the university are open to any post graduate student under the usual conditions.

Graduates desiring to undertake special work are provided with the necessary facilities in the laboratories and hospital wards.

Extension lectures:—Under the aegis of the Canadian Medical Association (in conjunction with the Ontario Medical Association for the Province of Ontario) groups of teachers have visited numerous places in Canada, often remote districts, from the Atlantic to the Pacific. These teachers address gatherings of medical men regarding recent advances in medicine; they see cases in consultation and otherwise assist local practitioners in the elucidation of their problems. The teachers are obtained from numerous medical centers in Canada and the University of Toronto plays its part in providing their share of instructors. During the past year 79 members of the staff of the faculty of medicine have contributed 257 lectures, etc., for the furtherance of this most laudable project.

The President of the University in his annual report provides a detailed statement of research activities in all departments. It is sufficient for the Dean's report to state that in the various laboratories and hospital wards under the control of the faculty of medicine, an increasing amount of original investigation is carried on year by year. Many important problems are studied and numerous contributions have been published in scientific journals reporting results of scientific value which, in many instances, have proved of service in the care of the sick and in the treatment and prevention of disease.

(3) REPORT OF THE DEAN OF THE FACULTY OF APPLIED SCIENCE AND ENGINEERING

(C. H. Mitchell, C.B., C.M.G., C.E.)

With the close of another academic session it is with pleasure I report satisfactory progress in the work of this faculty. Not only has the standard of instruction been maintained, and in some instances improved, but the efforts of both staff and students have appeared to be reflected in better examination results and general academic attainment.

The increase in students was still more marked, especially in the first year, which again increased by twenty per cent. The total number of students in attendance after the recent period of decrease, has, within the past two years, recovered until it is now almost the same as five years ago. The following table will illustrate this:

Attendance in Faculty of Applied Science

	Years				Total Attendance
	I	II	III	IV	
1923-24	125	127	150	165	567
1924-25	116	121	113	138	488
1925-26	126	107	119	93	445
1926-27	163	110	110	104	487
1927-28	192	149	109	100	550

With reference to the matter of numbers, the total attendance, which now appears to again be increasing, need not give us concern at this time, for on the the whole the building accommodation is sufficient if crowding does not become concentrated in one or two departments. Should the junior years continue to increase, we will again have difficulty due to large numbers. If the usual indications, which in the past have preceded increased numbers in this faculty, are to be relied upon, there is a likelihood of a still greater increase on account of the marked activity in the development of our natural resources and in business prosperity generally.

We realize that numbers, however, are not the measure of the success of a university or of a faculty. If increased numbers should come, there is all the greater reason for a stricter attention to the excellence of the instruction to meet the modern requirements, and the ever changing conditions wherein applied science and engineering play such a prominent part in the development of the country. With this in view there has been considerable thought given during the past year to the content of the curricula in the various departments and this study is continuing. Already various changes have been made, bringing instruction more closely into line with changing practice, and, indeed, in leading it, as a university should, looking not only to the present, but five and ten years ahead, anticipating the trend of requirements of the country, to apply the best we have both in brains and natural resources in combination.

Looked at in a broad sense, it is appropriate that engineering education, especially as viewed today in this university, should be treated from a business

aspect. If any survey, such as is now being made, is to be useful, it should envisage not only what is the present worth of the "property" but what its assets are "as a going concern". Whatever the present worth is, whatever the assets, the duty we have as a faculty and a university, is firmly to secure the capital and assets, so that there can be no future impairment. We must constantly consider, as do business concerns, how to build on firmer foundations, how to build up and improve and expand the "business", so as to ensure adequate future dividends for the generations following. The "dividends" are our graduates, produced from year to year, and we must be sure that their quality is maintained, and suitable for the requirements of Canada.

With respect to graduates, it is gratifying to report that the lack of employment in the country, which was so apparent several years ago, has now largely been remedied. The graduating class this year was promptly absorbed in work within our own country and there are many instances where graduates who, a few years ago, had found employment in the United States, have now returned to lucrative positions in Canada.

During the past year, the celebration of the Centenary of the University was accompanied by the observance of the Semi-Centennial of this faculty, it having been fifty years since the founding of the original School of Practical Science. This was marked at the Alumni Reunion by a notable homecoming of the graduates of the faculty, there having been nine hundred and twenty registered to participate in the extensive programme by the Engineering Alumni. In this the undergraduates took a very active part and displayed much enthusiasm and a fine example of loyalty to the University, along with the graduates. A pleasing feature of this was the unveiling and presentation to the University by the graduates of a bronze bust of the late John Galbraith, M.A., for so many years principal and dean of the faculty.

With respect to research, in which the members of this faculty are so active through the School of Engineering Research, it is also gratifying to report that most satisfactory progress has been made throughout the year. This organisation, constituted within the faculty, has again proved the great value which this research movement has for the training of men in research and in the carrying out of investigations. It is appropriate that this work comprises two important parts, the one of a fundamental character, dealing with scientific principles, and the other aiming at securing information and determining application directly to industrial problems and engineering practice.

We are apparently on the verge of a most desirable and long overdue expansion of industrial research, both in this Province and in the Dominion as a whole, due to the proposed direct governmental assistance. The new era of industrial development through organised investigation must increase very shortly, the demand for investigators who have had experience in research in the various branches of science, both pure and applied. In the inauguration of these research movements by the governments, it is most fortunate that skilled men are, to some extent, to be found in the country capable of carrying on research work of a high order and it is a matter for congratulation that there are already many of these who have had their training through the School of Engineering Research. However, this number is still numerically small and this makes it the more necessary to maintain and expand the activities of this organisation.

The work of the School of Engineering Research has been, and naturally will still further be, in a very real sense complementary to that of the proposed and existing governmental research agencies. The reactions from this, so far as this faculty is concerned, will produce pronounced benefits to both staff and students, stimulating in a high degree the research spirit in both. In these respects the School of Engineering Research is amply justifying its existence and the efforts and appropriations that have been expended by it.

(4) REPORT OF THE DEAN OF THE ONTARIO COLLEGE OF EDUCATION

(Dr. Wm. Pakenham)

The popularity of the University Schools among the parents of Toronto and the urgency of the applications have filled the classes to overflowing. It will be necessary, if the Schools are to be model schools for the Province, to limit the registration in each class to the numbers approved by the Provincial regulations.

The present-day trend in the training of teachers stresses practical work to the neglect of theory. This will involve more oral work in the languages, more laboratory work in science, more practice in teaching,—and a larger staff in the College of Education to achieve these ends.

Mr. S. W. Perry, instructor in art in the Ontario College of Education, retired from the active duties of the classroom with the close of the session. Mr. Perry had been an assistant and principal of distinction in Ontario High Schools for years before he came to the College of Education. Through his work at the College of Education he has done more than any other man to establish and direct instruction in art in the schools of Ontario. He takes with him into retirement the good wishes of the teachers of the province.

The public library system of Ontario is in the very first rank. To keep it in its rank, the Minister of Education has decided to expand his short course of training for librarians. With the cooperation of the University, he has provided for the creation in the College of Education of a Library School with a one year's course of training for provincial certificates. The interest already aroused justifies the belief that the Library School's first session will open in September, 1928, with a very large attendance.

Shortly after the close of the session the College of Education suffered a very grievous loss. Professor Crawford, who has been in charge of the department of mathematics in the College of Education and the University Schools since their organisation on Bloor St., died suddenly July 16th at Innsbruck in the Austrian Tyrol where he was travelling with his family. Professor Crawford came to the College of Education from Hamilton, where for ten years he had charge of the department of mathematics in the Normal College. He was the senior in experience of those engaged in training High School teachers in Ontario. "As a teacher of mathematics he has not his equal in the schools of Ontario" exclaimed an educational administrator when he heard of his sudden death. The staff of the College of Education mourn the loss not only of the great teacher but of a much-beloved colleague.

(5) REPORT OF THE DEAN OF THE FACULTY OF FORESTRY

(Dr. C. D. Howe)

The work of the past year of the Faculty of Forestry has been reasonably successful but not entirely satisfactory. The registration has been the largest in the history of the school and the graduating class attained the highest academic standing on the average, as indicated by the marks, of any class since there were any considerable numbers in the faculty. There seems to be little doubt that the students are improving in application to work, yet too many are satisfied with a passing mark. We must devise some means of creating a higher standard of scholarship in the undergraduate work. About twenty per cent. of the students failed in the first year. This is the usual proportion and it is too large. We are considering the advisability of establishing a pre-entrance course in woods work so that a student may have the opportunity to determine for himself his adapta-

bility for the profession and to give the staff the opportunity to eliminate the mis-fits before they enter the University.

The private industries are beginning to realise that university trained men can save them money in their woods operations. Therefore, an increasingly larger proportion of our graduates each year goes into employment with pulp and paper companies and allied industries, being largely influenced by the greater financial rewards in such work. This has led us to consider the advisability of modifying the course somewhat so that the graduates can be made more immediately useful to the industries. This might take the form of special courses in the last two years with more field work in engineering and lumbering. On the other hand, the students planning to work for governmental organisations might be given special courses in silviculture and the biological aspects of forestry. These objects might be brought about by abbreviating or expanding certain courses already in the curriculum or the whole undergraduate course might be extended a year. The proposition has been laid before the Alumni and we await their discussion of the matter.

Professor White is spending the four summer months in Europe where he will visit the forestry schools and study the forestry methods of Great Britain, France, Germany, Switzerland, Denmark, Norway, Sweden and Finland. His observations and conclusions will be of great benefit to the school.

Professor Dwight is continuing, this summer, his growth yield studies in young stands of pulpwood in northern Ontario where he is making very important contributions to the fundamental aspects of our forestry problems. In the aggregate there are large quantities of young growth of the pulpwood species on the old burns and windfalls in the north country. Professor Dwight is attempting to determine to what extent these young growth stands may be depended upon to furnish future supplies of pulpwood when the mature forests are exhausted.

Mr. Hosie, with a party of students, is attempting to find a readily recognisable and easily applied basis for the classification of forest types of Ontario. The significance of this work lies in the fact that if successful, it will greatly simplify the application of the estimates of the standing timber and pulpwood and of the results of the growth and yield studies.

The two projects above are being carried on under the direction of the Forestry Board of which the Dean of the Faculty of Forestry is Chairman. Two other investigative projects are also being carried on by the Board: one of these is concerned with the effect of slash burning on the regeneration of the pulpwood species and the other with a study of economic and forest conditions in a certain district in the Central Ontario region with the object of determining the advisability of placing the areas under forest reserves.

The Dean each year gives a larger portion of his time to extramural work in giving addresses and in writing articles for the press. The space given to his public discussions of our forestry problems by the financial journals has been a notable and significant feature of the past year.

(6) REPORT OF THE DEAN OF THE FACULTY OF MUSIC

(Ernest MacMillan, B.A., Mus. Doc.)

During the session 1927-28, the number of students registered was 37. In the course leading to the degree of Bachelor of Music, 13 registered in the first year; 6 in the second year; and 13 in the third year. The number of occasional students was 3, and the number registered in the course leading to the degree of Doctor of Music was 2.

The faculty suffered a serious loss by the resignation of Dr. Healey Willan, whose great musical gifts and erudition were for so many years a source of great strength. Mr. Leo Smith, Mus. Bac., was appointed to fill his place.

The following lectures were given by members of the faculty of music:—

ERNEST MACMILLAN, Esq., B.A., Mus.Doc.:
For third year students:—
January 9—"Free Counterpoint"
January 23—"Part-writing for Strings."
February 6—"Part-writing for Voices."
February 20—"Figuration in Accompaniment."

H. A. FRICKER, Esq., M.A., Mus.Doc.:
For first year students:—
January 13—"Harmony and Counterpoint."
January 20—"Harmony and Counterpoint."
For students of all years:—
January 27—"Handel"; "Purcell."
February 3—"Omar Khayyam"—Granville Bantock.

F. A. MOURÉ, Esq., Mus.Doc.:
For students of all years:—
January 16—"Clementi and some of his Contemporaries."
January 30—"The French School of the 18th Century."
February 13—"The Modern French School."
February 27—"Musical Allusions in Literature."

LEO SMITH, Esq., Mus.Bac.:
For second year students:—
February 10—"Modulation."
February 17—"The Elements of Fugue."
February 24—"Problems in Strict Counterpoint."
March 2—"Contrapuntal Treatment of Chorales."

A number of interesting musical events took place in Convocation Hall during the season. The visit of the Harvard Glee Club on December 27th occurred at an unfortunate time from the point of view of student attendance, but all who were present not only enjoyed the programme, but were greatly impressed by the possibilities of college music as demonstrated by Dr. Davison's singers. Other choral events were the first performance in Toronto of Mozart's *Requiem*, which formed part of a programme given by the Toronto Conservatory of Music Chorus and Orchestra, and Bach's *St. Matthew Passion*, which was given its third performance under the auspices of the University on April 3rd before an exceptionally large audience.

Dr. F. A. Mouré, University Organist, gave an excellent series of organ recitals in Convocation Hall—a series highly successful both from the artistic point of view and from that of attendance.

A new series of five chamber music concerts given exclusively for students of the University and the Conservatory of Music met with so ready a response from the student body that one is encouraged to hope that a similar series may be given each season. Three of the programmes were given by the Hart House String Quartet, one by the Flonzaley Quartet and one by the Persinger Quartet of San Francisco.

A demonstration of Dalcroze Eurythmics was given by M. Paul Boepple of New York in Convocation Hall on March 29th, and aroused keen interest on the part of the large audience present.

The support given to the Sunday evening and Friday afternoon concerts in Hart House has been no less enthusiastic than in former years. There can be no question of the desire on the part of students to hear as much good music as possible. Once again we owe a great debt to the musicians who have so kindly volunteered their services for these concerts.

There has again been a considerable increase in the number of candidates in the Local Examinations of the Toronto Conservatory of Music, the enrolment for the season totalling 19,707, as compared with 17,847 for 1926-27. The entries for the year were distributed as follows:—Piano, 12,485; Violin, 714; Singing, 533; Sight-Singing, 48; Organ, 29; Violoncello, 2; Theory (Rudiments, History, Harmony, Counterpoint), 5896.

(7) REPORT OF THE DEAN OF THE SCHOOL OF GRADUATE STUDIES

(Professor J. Playfair McMurrich)

During the session 1927-1928 the number of students registered in the School of Graduate Studies was 410, an increase over the previous session of 45. Of these 319 were residents of the Province of Ontario, 17 of British Columbia, 13 of Saskatchewan, 10 of Nova Scotia, 9 of Manitoba, 7 of Alberta, 7 of Quebec, 5 of New Brunswick, 2 of Prince Edward Island, 2 of Newfoundland, 6 of the United States and 13 of Overseas Dominions or foreign countries. The University of Toronto was responsible for the undergraduate training of 268, 121 came from other Canadian universities, 10 from other universities of the Empire, 7 from colleges in the United States and three from other foreign universities.

The degrees sought are shown in the following table:

Candidates for the degree of Ph.D.	91
Candidates for the degree of M.A.	148
Candidates for the degree of M.D.	1
Candidates for the degree of M.A.Sc.	3
Candidates for the degree of C.E.	3
Candidates for the degree of M.E.	1
Candidates for the degree of E.E.	1
Candidates for the degree of D.Paed.	64
Candidates for the degree of M.S.A.	9

In addition there were 89 registered as graduate students, without being definitely candidates for a degree.

The distribution of the candidates for the degrees of M.A. and Ph.D. in the various departments, according to the subject chosen as the major study, was as follows: anthropology, 1; biochemistry, 5; biology, 15; botany, 19; chemistry, 23; classics, 3; English, 16; food chemistry, 1; geology, 10; German, 2; history, 15; household science, 2; hygiene and preventive medicine, 4; mathematics, 4; mineralogy, 6; pathology and bacteriology, 1; pathological chemistry, 1; philosophy, 31; physics, 19; physiology, 10; political science, 11; psychology, 13; romance languages, 19; semitic languages, 11; zymology, 1.

During the year 17 students fulfilled the requirements for the degree of Ph.D.; 89 those for the M.A. degree; 1 those for the degree of M.D. (*cum laude*); 1 those for the degree of M.A.Sc.; 1 those for the degree of M.E.; 1 those for the degree of E.E.; 3 those for the degree of D.Paed; and 3 those for the degree of M.S.A.

The titles of the theses submitted for the degree of Ph.D. were:

F. M. ARCHIBALD,—Packing on solid Particles.
A. D. BARBOUR,—Studies on glycogen Hydrolysis.
MISS H. I. BATTLE,—Effects of extreme temperatures and salinities on developing and adult marine fishes.
D. J. BOWIE,—Studies on the Pancreas.
I. L. CHAIKOFF,—Studies in carbohydrate Metabolism.
G. P. COSGRAVE,—The relative importance of different horizontal segments of words for legibility.
K. W. FOLLEY,—The generalized Hypothesis of the Continuum.
W. E. GRAHAM,—Gaseous Conduction in carbon Arcs.
I. W. JONES,—The microscopical and chemical Nature of Alberta Coals.
D. E. KERR-LAWSON,—Pleochroic Haloes in Biotite.
L. G. KILBORN,—The respiratory Quotient after Evisceration in Cats.
MISS M. E. MACDONALD,—The position of Woman as reflected in Semitic Codes of Law.
J. E. MAYNARD,—The Origin of the Precambrian banded iron Formations.

MISS M. M. MORRISON,—The idealistic Theory of Relations.
J. O. G. SANDERSON,—The Geology along the Red Deer River, Alberta.
R. B. Y. SCOTT,—The original Language of the Apocalypse.
F. V. WINNETT,—The Paradise of Eden.

The open fellowships provided for students in the School of Graduate Studies for the session 1927-1928 have been renewed for the coming session by the generosity of the Canadian Pacific Railway, the Imperial Oil Company, Sir Edward Kemp, Colonel R. W. Leonard and the Robert Simpson Company. The following have been appointed to these fellowships, the universities from which they graduated and the departments in which they will pursue their major studies being indicated:

Miss E. A. Atherton, B.A., Dalhousie, Department of English.
D. E. Calvert, B.A., British Columbia, Department of English.
Miss M. F. Murray, B.A., McGill, Department of English.
E. J. Wiley, B.A., Manitoba, Department of English.
Miss M. K. J. Tolmie, B.A., British Columbia, Department of Philosophy.
Miss M. L. Ford, B.A., Acadia, Department of History.
C. M. Mottley, B.A., British Columbia, Department of Biology.

Appointments to other fellowships open to graduate students have been made as follows:

The Alexander Mackenzie Fellowships:—J. J. Talman, M.A., Western Ontario, Department of History; S. A. Saunders, B.A., Dalhousie, Department of Political Science.

The Ellen Mickle Fellowship:—B. Willinsky, M.D.

The University of Toronto War Memorial Fellowship:—W. S. W. Breese, B.A., Toronto.

The Education Fellowships:—L. C. Kitchen, M.A., McMaster; J. M. Stephens, B.A., Manitoba.

Ontario Government Fellowships:—Miss L. N. Farrell, B.A.

Attention may be directed to the granting this year for the first time of the degree of Master of Science in Agriculture, under the regulations drawn up last year and administered by a conjoint committee of the Ontario Agricultural College and the University of Toronto.

The need for additional open fellowships for graduate students was again made manifest this year, the number of applicants for financial aid in the further prosecution of their studies being far in excess of the number of fellowships available. Every such fellowship is an aid in the elevation of the intellectual standards of our country by giving to a young man or woman a broader and deeper training, with a capacity for maturer judgment.

The question of the migration of our Canadian students, especially to the United States, has recently been discussed on various occasions. There is no doubt that there is each year a notable southward migration, but there is also no doubt that a considerable number of those so migrating eventually return to Canada, bringing with them new viewpoints and a broader outlook. Nor are those who remain abroad entirely lost to Canada; they make for a *bonne entente* and in general tend to establish in foreign lands a recognition of a high standard for Canadian scholarship and scientific training. Yet even so one would wish that the opportunities of the great Republic, with its wealth and one hundred and twenty millions were not so attractive, that the services of those who have been trained in our universities might be in greater measure retained for Canada. In view of this desire that has been frequently expressed it seems an anomaly that in the Province of Ontario no doctor of philosophy, who has spent three or more years in graduate study, may receive an appointment as a teacher in our high schools unless he or she has taken an additional year's instruction in school management. Our graduates are welcomed to such positions in the United States; why should they be debarred from them in Ontario?

(8) REPORT OF THE DEAN OF THE FACULTY OF DENTISTRY

(Wallace Seccombe, D.D.S.)

Registration in this faculty for the session 1927-28 totalled two hundred and sixty-eight exclusive of dental nurses. The number was less than the previous session owing to the entrance requirement having been raised to that of honour matriculation. In requiring this higher standard Toronto is advancing in unison with McGill, Columbia, Harvard, Tufts and other universities as well as the New York State regulations. This standard of one year beyond pass matriculation, followed by five years in dentistry is known as the "one-five" plan, and is the equivalent of the "two-four" plan, which includes high school graduation, two years of arts, and four years of dentistry.

The work of the session has progressed very satisfactorily. The appointment of Dr. A. D. A. Mason as whole-time professor in charge of the dental infirmary, has materially helped in the co-ordination of the work of the department of clinical dentistry. Following the resignation of Professor J. W. Ingram, Dr. S. S. Crouch, who was assistant for a number of years, was appointed professor of dental anatomy.

During the past year the faculty has continued to stress the value of graduate service. It is essential that the undergraduate course be maintained at the highest point of quality, but it is also important from the standpoint of public health that the services of the faculty be made available to the members of the dental profession. Graduates are invited to visit the Dental Building and if possible spend a few days or weeks brushing up in any subject they may desire. The endeavour of the faculty is to co-operate with the members of the profession in every way feasible. Those who are practising in locations where they are denied the privileges of a library or the opportunity for consultation with their confreres, particularly value these services. During the year four hundred and fifty books were borrowed from the Dental Library by graduates. In addition the library was in constant use by the undergraduates and staff.

Fifty-two extramural lectures and clinics were given before dental societies throughout Ontario, being an increase of sixteen over the previous year. Letters received from these centres evidenced the need for and appreciation of these lectures. Four clinicians each spent a week or more in visiting centres in Northern Ontario, including Fort William, Sault Ste. Marie, Sudbury, North Bay, Haileybury and Timmins. Extramural clinics given at the more distant points are of especial value owing to the great distances of these graduates from the university.

Dr. W. G. Switzer gave a series of thirteen lecture-clinics in prosthetic dentistry at local points in Manitoba, Saskatchewan, Alberta and British Columbia. Reports received from various centres show that a great deal of interest was stimulated by Dr. Switzer in this branch of dentistry and that his visit was greatly appreciated by dental graduates throughout Western Canada.

It has been decided to hold the annual course for dental practitioners the week previous to Christmas. The course heretofore has been held during September but as many practitioners are more or less free from practice immediately preceding the Christmas season, it was decided to change the date and thus take advantage of this circumstance.

Eight candidates registered for the degree of Bachelor of Science in Dentistry and five were awarded the degree. Their success was based upon a satisfactory year of dental research, a reading knowledge of French or German, and a thesis. Much of the research accomplished during the year is being published in pamphlet form and is expected to be ready for distribution during the summer and early autumn.

The question of scholarships and fellowships in dentistry has received con-

sideration and a plan is being developed that will make better provision for the reward of high scholarship in this faculty. The plan includes a scholarship in honour of the memory of the late Dean Willmott. It is proposed that the Willmott scholarship of the value of $250 be awarded each year to a dental student, registered in the first year, who attained high standing in the honour matriculation subjects required for entrance to dentistry. Character, capacity for leadership and participation in student activities are to be considered in making the award.

Fifteen young women successfully completed the course in the Training School for Dental Nurses this year. The graduating exercises were held in St. George's Hall, Toronto, on May 29th, 1928. Successful candidates after two months of satisfactory apprenticeship with a practising dentist will be awarded diplomas by the Royal College of Dental Surgeons of Ontario.

Possibly the most outstanding advance this year has been in the development of plans for the enlargement of the work in the department of dental pathology. Professor Graham has been able to interest a number of his personal friends in the further development of this department and contributions and promises amounting to $10,000 have been made to the University for this purpose. It is hoped that at the end of the ensuing year, we shall be able to make a satisfactory report upon the developments which we expect these contributions to make possible.

(9) REPORT OF THE DIRECTOR OF THE SCHOOL OF HYGIENE

(J. G. FitzGerald, M.D., LL.D., Director)

The School of Hygiene consists of (1) the department of hygiene and preventive medicine, (2) the department of epidemiology and biometrics, (3) the department of physiological hygiene and (4) the department of public health nursing.

While this School was formally established in 1925, it was not until the opening of the new Hygiene Building in 1927 that satisfactory co-ordination of those departments of the university concerned in the teaching of hygiene, public health and preventive medicine could be effected. During the year the so-called sections of epidemiology and biometrics and physiological hygiene were created independent departments by the Governors of the University. As previously, the department of hygiene and preventive medicine continues as a department of the Faculty of Medicine. It is also recognised by the School of Graduate Studies as a department in which graduate students may proceed to higher degrees in the university. The new departments of epidemiology and biometrics and of physiological hygiene are similarly recognised and now offer facilities for students desiring to proceed to the degrees of Master of Arts and Doctor of Philosophy. These three departments are responsible for the major part of the instruction offered to graduates in medicine who are candidates for the diploma in public health. Two courses in the curriculum leading to the diploma in public health nursing are also provided by the department of hygiene and preventive medicine.

The department of Public Health Nursing, as in the past, continues as an independent university department, the academic work of which, however, is closely correlated to that in the other departments of the School of Hygiene.

The financial support of the newly created departments of the School comes from the income on the endowment contributed to the Governors by the Rockefeller Foundation during the current year. Dr. R. D. Defries, associate professor of hygiene and preventive medicine, has been appointed head of the department of epidemiology and biometrics and Dr. C. H. Best, assistant professor of physiological hygiene, head of the department of physiological hygiene.

Splendid facilities for research are provided by the close relationship of the School of Hygiene to the Connaught Laboratories. Details of research work done jointly in the School of Hygiene and Connaught Laboratories will be found in the report of the director of these laboratories.

Registration in the School of Hygiene in the year 1927-28 is as follows:—

A.	Graduates—	
	(1) Candidates for the Diploma in Public Health	7
	(2) Candidates for the degree of M.A.	2
	(3) Candidates for the degree of Ph.D.	2
	(4) Occasional students	3
B.	Candidates for the Diploma in Public Health Nursing	53
C.	Undergraduates—	
	(1) Faculty of Medicine, 5th year	109
	(2) Faculty of Applied Science, 4th year (Municipal Option)	5
	(3) Faculty of Household Science, 3rd year	63
	(4) Department of Social Service	28
	(5) Department of University Extension (Occupational Therapy, etc.)	58

(10) REPORT ON RESEARCH

Anatomy, under direction of Professor J. P. McMurrich

Professor McMurrich has given attention during the session to the following problems:—

1. A study of age-changes in the vermiform appendix with special reference to the lymphatic tissue. The material for this study has been furnished from the autopsy rooms of the Hospital for Sick Children and the Toronto General Hospital and thanks are due to Dr. Erb and Dr. Bates for their kindness in supplying it. The study is as yet incomplete, additional material being desirable.

2. A study of the anatomy and embryological significance of a remarkable diverticulum of the small intestine. This has been carried on in collaboration with Dr. F. F. Tisdale in whose service, at the Hospital for Sick Children, the case occurred.

3. A study of the developmental stages of a number of organs in a human embryo 6 mm. in length.

Dr. J. C. Watt has continued his studies on ossification and calcification of tissues as opportunity offered. His studies have run along three main lines.

1. A study of the ossification changes in bones of different types, interesting results having been obtained as to the manner in which the ossification processes take place in different bones.

2. A minute study of the calcification and ossification of cartilage as shown in thin sections of bone prepared without decalcification.

3. A technique has been developed for rendering visible calcium deposits in bone and calcified cartilage and for precipitating soluble calcium supplies occurring in cartilage about to calcify. This technique has among other things rendered possible the demonstration of the comparative amounts of calcium salts present in health, in active rickets and in healed rickets.

Dr. E. A. Linell has carried on investigations of the structure of the nervous system along several lines.

1. On the differential histology of neuroglia with reference to the various types of glioma. (With Dr. Mary I. Tom.)

2. An experimental study of the histology of brain repair after trauma.

3. The distribution of blood vessels in the posterior and lateral funiculi of the spinal cord, with reference to the etiology of certain degenerative processes in these funiculi.

4. A study of the structural conditions in two cases of Huntington's chorea, the material for which was obtained by the kindness of Dr. Wm. Magner.

5. An investigation of the secretory nerve-endings in glandular tissue. (With Dr. Mary I. Tom.)

Dr. H. A. Cates has continued his anthropometric studies of pre-school age children in the St. George Nursery School. Bi-weekly measurements have been made of 17 children of ages from 2½ to 4½ years, with the object of determining the rate of growth of the face and brain case relatively to each other and to the total height and weight and the age. It is obvious that in order to secure results these studies must be carried on through a series of years, and it is desirable that they should include measurements of individuals of all ages from birth to adult life.

In addition to this major study Dr. Cates has undertaken the study of the deep interfascial spaces of the palm of the hand, a subject of importance in connection with the spread of infection in the hand. He has also begun a study of collateral circulation following ligature of the femoral artery, the object being to determine the conditions that determine the establishment of this circulation.

Dr. H. G. Willson has begun a study of the development of the fasciae and aponeurosis of the lower abdominal wall.

Dr. H. A. L. Skinner has continued his study of the characteristic tumours of the auditory nerve. He has been able to identify the specific cells of the tumours and is now endeavouring to determine their origin by an intensive study of the structure and development of the nerve.

Dr. Mary I. Tom has collaborated with Dr. Linell in studies on the differential histology of neuroglia and on the secretory nerve-endings in glandular tissue. These, however, have constituted but a small part of her work, for she has assisted in the preparation of material for most of the investigations that have been carried on in the department. Indeed, without her technical skill much of the research that has been carried on would have been impossible.

Mr. W. T. Grant, Richardson Research Fellow in Anatomy, has devoted his time to a study of the development of the roof of the fourth ventricle of the brain and of the chorioid plexus. He has also made preparation of a skull and brain, from which X-ray films were taken demonstrating cerebral localisation.

Mr. H. LeMasurier has prepared a reconstruction of the trachea and lungs of a human embryo, 6 mm. in length and is now engaged on experiments aimed to develop a satisfactory technique by which such models may be copper-plated and so protected from injury.

Astronomy, under direction of Professor C. A. Chant

The major part of Dr. Young's time, outside the regular work of instruction, has been devoted to the completion of the reflecting telescope on which we have been engaged for two years. This instrument was begun for several reasons, one being the belief that we should obtain much experience which would be of value in designing the great instrument we expect to have. The diameter of the mirror is 19 inches, making the telescope the second largest in Canada. It should be mounted in a suitable location to form a part of the equipment of a students' observatory.

During the session some 27 photographs were taken within the city and on the height of land south of Aurora, of the polar star trails, with the object of studying atmospheric conditions in the neighbourhood of the city. Preliminary examination of the plates shows that effective astronomical observation can be made at moderate distances from the city.

In the expectation that we shall be able to begin an extensive programme of stellar research, we have prepared a card catalogue of stellar data. Work on this catalogue has been continued during the current year.

A graduate student has made progress on a research into the wave-lengths of substances in stars of various types. It is proposed to continue this next

session and to prepare tables of wave-lengths which will be of use in spectroscopic investigations with a large instrument.

An orbit for a spectroscopic double star H.R.176819, begun by Mr. P. M. Millman at the Victoria Observatory during the summer has been completed.

The Banting and Best Chair of Medical Research

An investigation of experimental silicosis has been undertaken with the assistance of Dr. G. Cameron. Progress is slow because of the length of time required to induce silicosis in animals. Through lack of space workers in this department have been scattered in various laboratories: for courtesy extended to these workers Professor Banting wishes to thank Professors Klotz, Henderson, Harding and Burton. He also thanks Professor Graham of the Ontario Agricultural College for supplying material for the study of tumour growth.

Research work carried on during the session may be briefly summarised as follows:—Dr. Brebner—By treating eight-day chicken embryo pulp with extracts of placenta, and injecting the mixture into the breast muscle of an adult fowl, a malignant tumour results. A preliminary report has been published. Dr. Ida Coates—Experiments showed that Bios I (supplied by the department of chemistry) causes a marked stimulation to the growth of cells in tissue culture. Dr. B. S. Cornell—Working in the department of pharmacology developed an accurate colorometric technique for the estimation of cholesterol in the blood and tissues and applied this in determining the effect of the injection of food and the injection of histamine on the blood cholesterol. Dr. E. J. King—Working with Dr. Geo. Hunter, Dr. King elaborated a method of estimating glutathione, ergothionine and uric acid in simple solution and in biological material. Dr. King also studied Isaac's method of estimating silica in the tissues and found it liable to several sources of error. Dr. Lucas—In association with Dr. Geo. Hunter, an investigation has been undertaken of cystinuria and with Dr. King has found certain sources of error in the use of picric acid as an artificial standard in the colorometric estimation of silica. Dr. Shipley—An investigation of tuberculosis of the kidney has been carried out in the department of pathology; the results are ready for publication. Mrs. Deacon—Work has been continued with Professor Burton on the effect of temperature on colloidal solutions. Miss Lang—Working with Dr. George W. Ross has carried out investigations on rheumatic fever and certain problems connected with the opsonic index. Dr. A. Cox—Experiments on the Thymus in the hope of producing experimental status lymphaticus.

Biochemistry, under direction of Professor A. Hunter

Mr. Dauphinee has continued his investigation of the rate at which arginine is liberated in the tryptic hydrolysis of proteins. He finds that in all cases examined the greater part of this amino acid is set free with surprising rapidity; but that a certain apparently definite proportion always remains unhydrolysed. It is to be concluded that arginine is combined within the protein molecule in at least two different ways.

Mr. Collier has used the enzyme asparaginase, previously studied in this laboratory by Mr. Geddes, to determine in a similar way the rate of liberation of asparagine and glutamine. It has been found that the action of the enzyme is greatly inhibited by the products of digestion. In spite of this difficulty it has been possible to ascertain that some amide is split off by trypsin, while some apparently is bound in a manner that resists the enzyme.

Mr. A. D. Barbour has extended his studies of glycogenolysis and glycogen synthesis. He has established the identity of a hitherto unknown intermediate product of the action of intracellular glycogenase. Physical and chemical examin-

ation uniformly agree in proving the product to be a trisaccharide. Because of the importance of glycogen in intracellular carbohydrate metabolism, this clear definition of the first stage in its decomposition is of considerable significance. Mr. Barbour has also made some progress toward the enzymatic synthesis of glycogen.

Dr. H. Borsook has been studying the effect of various emulsifying agents on the peptic synthesis of protein. He has found that some emulsifying agents accelerate the velocity of synthesis, that some also affect the amount synthesised at equilibrium, that some may even themselves effect a certain amount of protein synthesis in the absence of enzyme, and that the properties of the protein synthesised vary somewhat with the chemical nature of the emulsifying agent. Dr. Borsook has further demonstrated that synthesis may be effected from both the proteose and the sub-proteose fractions of a peptic digest, and that these syntheses are similarly accelerated in the presence of an emulsifying agent. In a digest from which plastein had been synthesised and removed it has been found possible to effect still further synthesis, and this process can be repeated at least four times in a single digest. This indicates that the cessation of a synthesis is due to attainment of equilibrium. The total synthesis amounted to about 50% of the total nitrogenous material.

Miss Violet E. Dunbar has concluded her study of the relation of peptic hydrolysis to the hydrogen ion concentration. Her results are in accordance with the view that protein exists in the cationic form on both sides of the isoelectric point.

Dr. A. M. Goulding has been studying methods of estimating urobilinogen. Difficulties have been encountered and the investigation is still in progress.

Mr. D. A. MacFadyen has studied the effect of temperature on measurements of electrode potentials. The results of his calculations will be of great service in the laboratory. He has been engaged also in a critical experimental study of the newer conception of the ionisation of amphoteric electrolytes; and has lately undertaken a study of the effect of sunlight on enzyme action.

Miss J. McFarlane has investigated the effect of alkali on the decomposition of proteins, and has found that no significant decomposition occurs in 24 hours in hydrogen ion concentrations greater than pH 10.0 at 37°. This study was designed to confirm the results of her previous investigation of the action of trypsin, and has indicated that the hydroxyl ion concentration necessary for tryptic action is in no case an interfering factor.

Biology, under direction of Professor B. A. Bensley

Histology: Professor W. H. Piersol, polyspermy in amphibian eggs, completed. Supervision of investigation by L. L. Bolton, digestive tract of fishes, continued at Cornell University.

Invertebrate Zoology, Entomology: (1) Professor E. M. Walker, anatomy of *Grylloblatta*, Oniscoidea of Canada, Odonata of Canadian Cordillera, nymphs of *Stylurus* group of the genus *Gomphus*, Odonata of Abitibi, growth stages of *Somatochlora*. Supervision of investigations by Professor C. J. Spencer, bionomics of Lepismatidae; C. W. Smith, parasitic flies of the genus *Gonia*; A. R. Graham, gall-lice of the genus *Chermes*; Miss A. A. Berkeley, anatomy and ecology of the prawn, *Pandalus danae*.

(2) Dr. N. H. Ford, development of pigmentation, studies on the respiratory quotient of *Grylloblatta*.

Marine Biology: Professor A. G. Huntsman. Supervision of, A. H. Needler, statistical studies of Atlantic fisheries, life history studies of the haddock; Miss H. I. Battle, spawning periodicity of *Enchelyopus cimbrius*, effects of extreme conditions on development and on tissues of fishes; W. S. Hall, plankton of Chamcook Lake, N.B.

Vertebrate Embryology: Professor A. F. Coventry, preliminary work on problems of abdominal wall closure in mammals. Supervision of, Miss A. A. Berkeley, studies on the completion plate of archenteron in *Amblystoma.*

Experimental Biology, Genetics: Professor J. W. MacArthur, sex factors in poultry, genetic behavior and linkage in tomato, controlled production of changed chromosome numbers in tomato, factors controlling longevity in *Daphnia* (in conjunction with Professor Baillie).

Comparative Neurology: Professor E. H. Craigie, studies on the mossy fibres of the cerebellar cortex, previously carried out in and now reported from the Instituto Cajal, Madrid; studies on the brain of the humming bird previously conducted at the Central Institute for Brain Research, Amsterdam, and now completed; parallels of arrangement of parts of the mesencephalon as between teleosts and birds, studies on the corpus striatum of birds, anatomy of the kiwi brain, vascularity of dogfish brain. Supervision of, C. G. Smith, estimation of total number of cells per unit volume in the brain of the rat; L. A. Smith, completion of work on elements of olfactory lobe.

Vertebrate Anatomy: Professor W. H. T. Baillie, studies on muscle-bone relation, variations in attachments of jaw muscles, development of the eye in amphibians and divergent types of visual organs. Experimental studies in conjunction with J. W. MacArthur as indicated above.

Ichthyology: Professor J. R. Dymond, taxonomy and distribution of trout and ciscoes of Canada, distribution of fishes in the Lake Ontario basin, factors affecting production of lake trout in Lake Ontario. Supervision of, C. McG. Mottley, trout of British Columbia.

Economic Fisheries Research: Mr. W. J. K. Harkness, sturgeon investigation. Supervision of, J. L. Hart, whitefish development in Lake Ontario; D. S. Rawson, bottom organisms of Lake Simcoe; H. Dignan, rate of development of whitefish and ciscoe eggs under experimental conditions; W. Buchner and G. van Loon, economic studies on yellow perch.

Fauna: Mr. L. L. Snyder, Mr. J. L. Baillie, distributional studies of birds and mammals (Royal Ontario Museum of Zoology); Mr. W. J. LeRay, history and identification of the Queen Snake in Ontario (Department of Biology).

Botany, under direction of Professor J. H. Faull

I. Cryptogamic Botany, Mycology and Pathology.
(Under the direction of Professor J. H. Faull.)

Darker, G. D.

(1) Morphological, cultural and taxonomic studies on the Hypodermataceae found on conifers. An extensive study which is now nearing completion.

Faull, J. H.

(2) The rusts of conifers.

(3) A Phacidium blight of conifers in association with Messrs. Lyons and Cosens of the Laurentide Pulp and Paper Company. The causal organism has been determined and a successful means of prevention devised. The situation has been saved with regard to reforesting with white spruce. Various conifers are attacked and the subject is being studied from various angles.

(4) The trunk diseases of various conifers. Studies have been made and are being continued which give information as to the relation between susceptibility and age of the hosts and the rate of progress of the various diseases. Curves have been drawn for balsam and work is now being concentrated on spruce.

Faull, J. H., and Darker, G. D.
(5) Life history studies of various tree rusts.

Lehmann, A. J. V.
(6) A Phacidium blight of balsam and white cedar.

Thompson, G. E.
(7) A Phacidium blight of spruce.

Hunter, Miss L. M.
(8) Life history studies on species of *Melampsora* and *Melampsoridium*.
(9) Comparative studies of the pycnia of rusts.

Van Camp, J. L.
(10) The morphology, biology and phylogeny of spruce rusts.

Mounce, Miss I.
(11) Life history, etc. of *Fomes pinicola*.

II. Plant Pathology.
(Under the direction of Professor D. L. Bailey.)

A. Topics investigated in 1927-28.

Coleman, L. C., and Cooper, R. F. V.
(12) Dead arm of Grapes. Dead arm is the most serious problem in grape production on the Niagara Peninsula and in this area grapes have become one of the foremost crops and the number of vineyards is still steadily increasing. This investigation is well started but must be continued over several years before sufficient information can be obtained to indicate the most satisfactory methods of control.

Willison, R. S.
(13) A study of wound gum formation in grape and peach is being made and the relation of this to infection by parasitic fungi. This problem is one of considerable significance but requires very careful investigation over a considerable period.

Koch, L. W.
(14) Raspberry Spur Blight. An investigation of this disease was begun in 1927 at the Dominion Plant Pathological Laboratory at St. Catharines and continued throughout the year at Toronto. A satisfactory beginning was made and the results reported in Mr. Koch's M.A. thesis.

Forward, Miss D. F.
(15) Carnation Rust. Miss Forward has investigated in a preliminary way the life history and parasitism of this rust which is a serious trouble in greenhouses. Her results are embodied in the thesis which she presented this year for the degree of Master of Arts.

B. Topics to be investigated in 1928-29.

(16) Projects 1 to 3 above will be continued. Project 4 will be modified to a study of the physiology of resistance in bean and carnation rusts. Mr. E. C. Beck is beginning a new project on the factors influencing the development of the perfect stage of the apple scab fungus. Two additional graduate students, Mr. J. H. Johnson and Mr. B. G. Montserin, have not decided definitely on their research problems. Mr. R. C. Russell of the University of Saskatchewan is expected to spend the coming year at Toronto studying the histological phases of the Take-all problem.

III. Plant Ecology and Seed Studies.
(Under the direction of Professor H. B. Sifton.)

Sifton, H. B.
(17) An investigation on the relationship between water supply and seed germination. Seeds of some species are weakened or killed if the medium in which they are planted has a high percentage of water. Similar conditions are harmless to others, and beneficial to some. The explanation is being sought.

Sifton, H. B., and Hamly, D. H.
(18) An investigation of the permeability of seed coats in legumes.

Pritchard, A. J.
(19) An ecological study of the plants of some Ontario lakes.

Work will be continued on these topics during the coming year, and also investigations concerning the relation of temperature to germination of seeds.

IV. Phanerogamic Botany, Genetics and Plant Breeding.
(Under the direction of Professor R. B. Thomson.)

A. Anatomy and Experimental Morphology.

Allin, A. E.
(20) Tangential pitting in the wood of fossil and living vascular plants.

Hart, N. C.
(21) The origin of resin canals in the wood of the pines.

Reed, Miss E. R. L.
(22) The anatomy of the seedling of Araucarians.

Thomson, R. B. and Allin, A. E.
(23) Devonian plants from Gaspé peninsula.

Thomson, R. B. and Reed, Miss E. R. L.
(24) "On the origin of root, stem and leaf, and the seed habit features of the Vascular Cryptogams" (Paper in preparation)

Thomson, R. B. and Sifton, H. B.
(25) Wound reactions of Sequois, Abies and Larix.
The determination of the season of maximum response to wounding.
The stimulation of resin production by chemical means.

Wright, Miss J. G.
(26) A continuation of the work in the pit-closing membrane in the higher Gymnosperms.

B. Taxonomy.

Watson, W. R.
(27) Collection and identification of Ontario flora (Timagami, Bruce Peninsula, Algonquin Park and local).

C. Genetics and Plant Breeding.

Strong, W. J.
(27) Genetical studies of the Cucumber (Experimental work being done at Vineland).

Taylor, T. M. C.
(28) Genetical and cytological studies of *Linaria*.

V. Plant Physiology.
(Under the direction of Professor G. H. Duff.)

Racicot, H. N.
(29) Studies of growth in *Phaseolus vulgaris*. The session of 1928-29 will see this work, initiated some years ago, completed and in press.

Kemp, W. L. S.

(30) Physiological problems in the growth of cuttings of *Syringa vulgaris*. Two years' work on this subject has been brought together and is now in press.

Millsap, Miss J. E.

(31) Researches in the respiration of standard cultures of *Phaseolus vulgaris*. 1. Respiratory activity of normal plants and plants with artificially reduced leaf area, at various points in the growth cycle. 2. The effect of temperature upon the succession of changes in respiration rate during prolonged starvation.

Krotkov, G.

(32) The metabolism of artificial cultures of excised plant tissues. By means of a new technique the carbon balance of plant tissues is being investigated. It is expected that this will afford a new means of approach to many problems of carbohydrate and nitrogenous metabolism in plants.

Forward, D. F. (In cooperation with Professor Bailey.)

(33) The physiological basis of resistance and susceptibility of *Phaseolus vulgaris* to the parasitism of *Uromyces appendiculatus*. A promising hypothesis has been formulated as a base from which to attack the general problem presented by certain obscure changes in resistance to rust undergone by various host-plants. The dwarf bean and its parasite have been chosen as experimental material and the work is in its initial stages.

Duff, G. H.

(34) 1. Methods of characterising the "Metabolic Age" of leaves. Certain regular, though obscure, metabolic changes take place in leaves as they pass from the juvenile to the senescent stage. This is an attempt to get a picture of the nature of some of these changes and to devise expeditious methods for determining their progress.

2. The mechanism of chlorophyll regeneration. This has particular reference to certain interesting cases of chlorophyll deficiency.

Chemistry, under direction of Professor W. Lash Miller

Twenty-one students were engaged in research last winter under the direction of professors of this department.

Of these, two were awarded the degree of Doctor of Philosophy, viz.: Mr. F. M. Archibald, M.A., ("The packing of fine particles", Prof. W. L. Miller) and Mr. W. E. Graham, ("Gaseous conduction in carbon arcs", Prof. W. L. Miller). The degree of Master of Arts was conferred on Mr. A. F. Charles, Mr. E. H. Smith, and Mr. R. C. Spooner; and the degree of Master of Science in Agriculture on Mr. O. A. Lemieux and on Mr. F. F. Morwich whose research was carried out in Guelph under Prof. R. Harcourt.

The following were the subjects of research:—

F. M. Archibald, M.A.:—The packing of fine particles.
A. F. Charles, B.A.:—Stereoisomers of di-toluyl ethylene.
N. D. Clare, B.Sc.:—Supersaturation of gases in organic liquids.
J. Cryer, M.A.:—Replacement of the alcohol radical in esters.
Miss E. V. Eastcott, Ph.D.:—The isolation and identification of Bios I.
Prof. J. B. Ferguson:—Compositions of the vapours given off by binary liquids.
Prof. W. S. Funnell:—Compositions of liquid and vapour phases in the system Methyl alcohol, water.

F. J. Giffen:—The effect of absorbed water on the electrical conductivity of powders.
A. R. Gordon, Ph.D.:—The summation of certain series which occur in the solutions of problems of diffusion.
A. R. Graham, M.A.:—Gaseous conduction in carbon arcs.
H. R. Hart, M.A.:—Thio-acid anhydrides in the Friedel and Crafts' reaction.
Miss M. Holt:—The production of giant yeast-cells by the use of certain amino-acids.
W. A. Irvine, B.A.Sc.:—Preparation and properties of sponge lead.
J. M. Kane, B.Sc.:—The effect of concentration on critical opalescence in the system Water, phenol.
E. E. Lent:—Photo-expansion of chlorine.
Prof. W. H. Martin:—The modified scattering of benzene and other liquids.
L. L. Perkin, M.A.:—Solubilities of the exalates of calcium.
L. I. Pugsley, B.A.:—The reaction between mercurous nitrate and potassium iodide.
H. J. Rose, M.A.:—Electrostenolysis.
S. C. Sifton, B.A.:—Purification of Bios II.
E. H. Smith, B.A.:—Iodine derivatives of pyromucic acid.
E. M. Sparling, M.A.:—Chemical derivatives of Bios II.
Miss H. Stantial, M.A.:—Sporulation in yeast, and the inheritance of tolerance to ammonium fluoride.
R. C. Spooner, B.A.:—Gaseous conduction in carbon arcs.

Food Chemistry, under direction of Professor C. C. Benson

The time for research work has been very much curtailed in this department during the session 1927-1928, owing to the amount of time needed for the instruction of larger classes.

Investigations in regard to vitamines have been continued; and pigeons, used for testing the values of extractives, have been more satisfactorily handled by the use of better synthetic diets.

Changes in the chemical composition of fruits, due to ripening have been studied. This work is also in progress.

Following investigations on fish muscle, made at St. Andrew's last summer, further studies have been made with bird muscle, noting changes in chemical reaction and in stiffness during the stages of *rigor mortis*.

Geology, under direction of Professor W. A. Parks

1. Professor A. P. Coleman (professor emeritus) continued his investigations of glacial phenomena in Eastern Ontario, Quebec, and New Brunswick, and reports excellent results.

2. Professor W. A. Parks directed the expedition to Saskatchewan and Alberta, under the immediate leadership of Mr. Levi Sternberg. Satisfactory results were obtained. Professor Parks, also, spent part of the summer in geological investigations at Ottawa, Whitby, and Collingwood. Professor Moore was engaged in geological work in the Lake Savant area in Northern Ontario and Professor MacLean at Kirkland lake.

During the winter the following investigations were conducted in the department.

3. *By Professor Parks*

(*a*) Completion of the investigation of the Ordovician black shales of Ontario.

(*b*) The anatomy of the rare bird-like dinosaur *Ornithomimus*.

4. *Under direction of Professor W. A. Parks*
   (*a*) Helgi Johnson—The fossils of the Cataract formation of Ontario.
   (*b*) J. O. G. Sanderson—The palaeontology and stratigraphy of the Edmonton formation of Alberta.
   (*c*) H. C. Laird—The *Stromatoporoidea* of the Guelph formation.

5. *By Professor E. S. Moore*
   (*a*) Study of the geology of the Lake Savant area.

6. *Under direction of Professor E. S. Moore*
   (*a*) J. E. Maynard—The solution, transportation, and precipitation of iron and silica (National Research Council).
   (*b*) Jack Satterly—The relations of diabases to silver deposits in Ontario (National Research Council).
   (*c*) D. R. Derry—The relations of iron carbonate to enclosing rocks in Precambrian iron deposits in Ontario.
   (*d*) F. J. Sugden—The occurrence of ankerite in iron deposits.

7. *Under direction of Professor Alex. MacLean*
   (*a*) L. V. Bell—The study of contact metamorphism in the Kirkland Lake gold field.

Household Science, under direction of Professor A. L. Laird

During the Session 1927-28 the following investigations have been in progress and we hope to continue these same studies next session.

Miss M. A. Copus has worked on the iron and protein content of beef tea as affected by the method of preparation.

Miss M. S. McCready has been studying the response of young children to colour in food.

Miss M. G. Barker has been working on the effect of different methods of preparation on the carbohydrate losses of vegetables.

Mineralogy, under direction of Professor T. L. Walker

Field work in the summer of 1927 involved one month's study in the gold, silver, and nickel districts of northern Ontario, by Professor T. L. Walker, two separate visits to Cobalt and South Lorrain by Professor Ellis Thomson, and two weeks studying the minerals associated with feldspar deposits in Hastings county and in the districts of Sudbury and Nipissing by Dr. D. E. Kerr-Lawson. In June, 1928, Professor Walker and Professor A. P. Coleman spent ten days in the Sudbury region where, many years ago, they assisted in the elucidation of the geology and petrography of the nickel-bearing rocks.

Investigations in the laboratory comprised the following:

(*a*) H. C. Rickaby continued his studies on the influence of the Sudbury nickel-bearing intrusive on the older rocks of the basin as indicated by the metamorphism of the latter.

(*b*) D. E. Kerr-Lawson concluded his studies of the origin and nature of pleochroic haloes with special reference to those observed in the dark mica found near Murray Bay, Quebec.

(*c*) Miss Ferga Carmichael continued her experiments on the rates of oxidation of certain sulphides and arsenides with special reference to the retardation or acceleration produced by the presence of small amounts of other substances.

(*d*) Professor Ellis Thomson has continued his study of the complex aggregates found in the ores of Cobalt and South Lorrain.

(*e*) Professor A. L. Parsons spent part of the summer of 1927 in the laboratories of the University of Stockholm, followed in 1928 by a period of study at the University of Munich. In both instances his object was to study the methods employed in the investigation of crystals by means of X-rays.

Introductory research work was carried out by Messrs. M. C. Haller, W. A. Jones, and A. R. Graham, who brought to the laboratories material collected during the previous summer while on field work in three different regions of Canada.

The research work in mineralogy during the past year has suffered by the loss of Mr. H. C. Rickaby who had succeeded Mr. E. W. Todd as Research Assistant, and of Mr. William Allingham, for fifteen years Attendant and Preparator in the Department of Mineralogy. Mr. Rickaby left to join the staff of the Department of Mines of Ontario, while Mr. Allingham became lapidary to the Geological Survey of Canada.

Obstetrics and Gynaecology, under direction of Dr. W. B. Hendry

Research work in the Toxaemias of Pregnancy is still being carried on by Dr. VanWyck in co-operation with the department of Pathological Chemistry, while some advances are being made in the study of Puerperal Infection by Dr. Dafoe, in co-operation with the Connaught Laboratories.

Pathological Chemistry, under direction of Professor V. J. Harding

A special examination was made of lactation on the chemical composition of blood, and a critical study of the relationship of those results to parturient paresis carried out. Further data on the "Toxaemias of Pregnancy" were collected.

Professor G. Hunter continued his researches on ergothionene in blood with the assistance of Dr. E. L. King and Mr. C. C. Lucas. (The department is indebted to the department of Medical Research for the co-operation of these two latter). With the co-operation of Dr. W. R. Campbell a metabolic study of a rare case of cystinuria was made.

Dr. R. N. Silverthorne completed his study of the oxidation of tricarboxylic acids in animals with a view to possible clinical applications. In connection with the use of potassium and sodium citrate in human therapy he made some interesting observations in "Alkaloses".

Dr. F. F. Van Nostrand studied sugar tolerance curves under varied conditions of diet.

Pediatrics, under direction of Dr. Alan Brown

In the sub-department of Paediatrics a number of problems have been studied including abnormal Breast Milks: Milk mixtures: The value of the banana in chronic intestinal indigestion: The hydrogen-ion concentration and the calcium and phosphorus in intestinal contents of rats on a normal and a rachitogenic diet, when the rats are kept inside and when exposed to sunshine: The antirachitic effect of sunshine throughout the year: The effect of altitude of the sun in the cure of rickets: The efficiency of various commercial glasses in permitting the passage of ultra violet rays: The effect of exposure to sunshine on the resistance to disease with rickets artificially produced in rats: The blood chemistry in diabetes and nephritis: Sugar tolerance test in diabetes and other conditions: Blood determinations in intestinal obstruction, pyloric stenosis, burns and whooping cough.

Pharmacology, under direction of Dr. V. E. Henderson

Research work included a study of the mechanism of peristalsis by Professor Henderson. The late liver intoxications occurring with chloroform and similar halogen anaesthetics by Dr. Lucas. The physiology and pharmacology of the respiratory centre by Dr. Sweet. A study of certain diuretics by Dr. McGonigle. The possibility of deleterious effects being produced by low concentrations of ether vapour inhaled over a very long period of time by Dr. W. E. Brown of the department of therapeutics. Cholesterin metabolism by Dr. B. S. Cornell of the department of medical research.

Physics, under direction of Professor J. C. McLennan

During the session 1927-28 there were nineteen graduate students in regular attendance, of whom eighteen were enrolled for graduate instruction, seven for the degree of Master of Arts, and eleven for the degree of Doctor of Philosophy. Seven students received the M.A. degree. Forty-seven additional graduates from our own and other universities attended one or other of two specially arranged short courses of lectures.

As in other years all the members of the professoriate gave advanced courses of instruction in theoretical physics and all the professors in the department have either directed research workers or have done research work themselves. We were favoured during the session by visits from Professor J. Franck, of Göttingen, Germany, and Professor H. A. Kramers, of Utrecht, Holland. Professor Franck gave two lectures in the Department on the Theory of Band Spectra and Professor Kramers an extended course of some twenty-four lectures on the following topics:—

1. Bohr's principle of correspondence and the Heisenberg matrix theory of of the atom.
2. The de Broglie wave theory of matter; Schrödinger's differential equation.
3. Connection between wave mechanics and matrix theory.
4. The theory of the hydrogen atom.
5. Relativistic treatment of wave-mechanical problems; theory of the spin electron.
6. The generalised matrix theory of Dirac, Jordan and Weyl.
7. The interaction of similar particles; the Pauli exclusion principle.
8. Dirac's quantum-mechanical treatment of electromagnetic waves.
9. The structure of molecules and the theory of band spectra. He also gave a popular lecture on "Causality in Science" to which the public generally were invited. These lectures were attended by graduate students and members of staff from our own and other departments of the University. The attendance from outside cities was as follows: Washington, D.C., 1, Eastman Kodak Company, Rochester, 1, Cornell University, 1, University of Buffalo, 1, The General Electric Company of Schenectady, 1, McGill University, 5, University of Western Ontario, 1.

Investigations undertaken during the year are given in detail below. These, as in former years, were concerned with spectroscopy, with the use of low temperatures, with the study of crystallised gases, with the properties of single crystals, with thermionic valves and their uses, with the constitution of the upper atmosphere, and with the photoelectric and other properties of matter.

Low Temperature Research. During the year it was not found necessary to modify in any important manner the cryogenic equipment installed in the Physical Laboratory of the University of Toronto for the production of liquid air, liquid hydrogen or liquid helium. Minor changes were made, however, and improvements introduced as a result of experience in operation that have increased the efficiency and lowered the cost of operating the plant.

With a view to ensuring a supply of helium for future activities a thorough examination was made of the Inglewood Gas Field. In order to ascertain the amount of gas available in the field an experiment was made that involved blowing off the gas from one of the wells recently sunk. In doing this the pressure quickly dropped to a low value, and the flow of gas which gradually decreased was noted from day to day for a period of over two weeks. Observations were also made on the gas pressures in this well and also on the pressures in the neighbouring wells, all of which were found to be affected. The gas well that had been opened was then closed and the pressure in it was allowed to build up. Readings of pressure were taken on all the wells during this building-up process. From the whole series of observations thus made it was found that the conclusion could be drawn that the amount of gas immediately available in the region tapped by the gas wells was about 4,000,000 cubic feet. As the helium content of the gas is about 0.8% it follows that the amount of helium immediately available from the field is therefore limited to about 32,000 cubic feet. With this limited supply it would be quite impossible and impracticable to use the helium extraction plant formerly operated at Calgary.

A new type of extraction equipment is, therefore, being developed that has very much more modest proportions than the Calgary plant, and that involves the expansion of the gas at high pressure through a fine nozzle and the use of the heat regenerative process. With it we expect to be able to treat 25,000 cubic feet of gas and obtain a daily yield of between 150 and 200 cubic feet of helium. By operating on this limited scale for periods of about three months each summer it is likely that we shall be able to ensure a supply of helium for a number of years. Fresh gas will have time to diffuse through to the wells from distant points in the field in the interval between the periods of operating the plant and in this way furnish additions to the available supply.

Acknowledgment should be made here of the donation to the Laboratory by Dr. Cummings of Toronto of a complete X-Ray Equipment.

It may be of interest and perhaps should be recorded here that the Director of the Physical Laboratory was awarded this year a Royal Medal by the Royal Society of London for his Researches in Spectroscopy and Atomic Physics, and was also invited to give the Annual Bakerian Lecture before the Royal Society this year, the subject being the Aurora and its Spectrum.

The list immediately following gives a short summary of various researches carried out in the department during the Session.

A. *Researches directed by Professor J. C. McLennan.*

1. *An Investigation of the Spectra of the Major Planets.* By Professor J. C. McLennan and A. C. Burton, B.Sc.

It was found by the use of photographic plates sensitised with dicyanin that the absorption spectrum of water in the liquid state contained bands at λ6190A, λ6650A, and λ7200A, that could be identified with bands in the spectrum of the light from the more distant planets.

2. *The Decomposition of Ammonia by Cathode Rays.* By Professor J. C. McLennan and Gilbert Greenwood, M.Sc.

Ammonia was found to be partly decomposed by high speed electrons. The percentage decomposition varied with the speed of the rays and with the pressure of the gas. An equilibrium between hydrogen-nitrogen and ammonia was established for each pressure investigated.

3. *The Zeeman Effect for the Spectral Lines of Tantalum.* By Professor J. C. McLennan and A. M. I. A. W. Durnford, M.A.

In all some fifty Zeeman patterns were secured for the wave-lengths of Tantalum between λ5548 and λ6700A.

4. *On the structure of the First Spark Spectrum of Silver Ag. II.* By Professor J. C. McLennan and Dr. A. B. McLay.
Important terms of the Ag Spectrum were discovered that revealed the structure of this spectrum.

5. *On the structure of the Second Spark Spectrum of Cadmium, Cd III.* By Professor J. C. McLennan and Dr. A. B. McLay.
This spectrum was fully analysed and shown to be similar to that of the first spark spectrum of silver.

6. *On the First Spark Spectrum of Gold, Au II.* By Professor J. C. McLennan and Dr. A. B. McLay.
A term scheme was found for this spectrum that is similar in the main features to the one recently put forward by the authors for Ag II.

7. *The Photoelectric Effect at very low Temperatures.* By J. C. McLennan, L. A. Matheson and C. D. Niven, M.A.
In this research the photoelectric effect obtainable with potassium irradiated with light from four different spectral ranges was investigated at the lowest attainable temperatures.

8. *On Band Spectra and the Hydrogen Bands.* By Professor J. C. McLennan and Dr. Richard Ruedy.
A study was made of various band spectra and a series of charts were prepared that embodied the most of their characteristic features. Progress was made in elucidating the structure of the Hydrogen band spectrum.

9. *Absorption in Excited Krypton and Xenon.* By Professor J. C. McLennan and Dr. Richard Ruedy.
A certain number of Infra-red Krypton and Xenon wave-lengths were found to be absorbed by these gases, when subjected to feeble electrical excitation. The energy levels of Krypton and Xenon were shewn to correspond with those of Neon and Argon.

10. *Height of the Ozone Layer in Canada.* By Professor J. C. McLennan, Dr. Richard Ruedy and Mrs. V. Krotkov.
Determinations were made of the "effective height" of the Ozone layer in the upper atmosphere in Canada. On September 4th, 1927, values of 50 km and 56 km were found. At various other times the values 45 km, 53.8 km, 50 km, and 57 km were obtained.

11. *On Active Nitrogen.* By Professor J. C. McLennan, Dr. Richard Ruedy and J. M. Anderson, B.A.
Active nitrogen was investigated under a variety of conditions. In one case it was studied with a Nitrogen-Xenon gas mixture, but no spectral lines of Xenon were found to be excited by the Active Nitrogen.

12. *Hyperfine Studies of Spark Lines.* By J. C. McLennan, Dr. Richard Ruedy and Miss Elizabeth Allin, M.A.
The structure of the spark lines of the elements, lead, cadmium and tin were investigated with a powerful echelon spectrograph and compared with the structure of corresponding lines in the arc spectrum of the elements preceding them.

13. *Fluorescence excited by short ultra-violet radiation in Nitrogen.* By Professor J. C. McLennan, Dr. Richard Ruedy and J. H. Clements, B.A.
In this research the fluorescence of oxygen was investigated and in particular the influence of the inert gases upon the fluorescence of this gas was studied.

14. *Magnetic Properties of Single Crystals of Zinc and Cadmium.* By Professor J. C. McLennan, Dr. Richard Ruedy, and Miss Elizabeth Cohen, M.A.

The specific magnetic susceptibilities were obtained for these crystals in a direction parallel to the principal axes of the crystal and in a direction perpendicular to it. Crystals of mercury are also being investigated and all are being studied at low temperatures.

15. *Intensities in the Argon Spectrum.* By Professor J. C. McLennan, Dr. Richard Ruedy, and Mrs. V. Krotkov.

The Argon spectrum was studied under conditions of excitation suitable for bringing out the higher members of its series.

16. *On the Crystal Structure of Calcium.* By C. D. Niven, M.A.

In this investigation it was found possible to grow crystals of calcium with facets so bright and regularly formed that it could be readily shown by the optical method that the crystals belonged to the rhombo dodecahedron class.

17. *On the Phosphorescence Spectrum of Solid Nitrogen.* By Professor J. C. McLennan, Mr. H. J. C. Ireton, M.A., and E. W. Samson, M.A.

Important additions to this spectrum were discovered. The laws of decay were investigated for the intensities of the two visible phosphorescent bands by means of a special photometer. No polarisation was exhibited by the phosphorescent light.

18. *Aston's Packing Fractions and their Interpretation.* By A. C. Burton, B.Sc.

A novel method of gaining information covering the packing of particles in atomic nuclei has been worked out that is likely to throw light on the structure of nuclei generally.

19. *The Crystal Structure of Solid Acetylene.* By Professor J. C. McLennan and W. G. Plummer, M.Sc.

X-ray powder photographs of solidified acetylene shew that it crystalises in two forms, one of which is definitely cubic and the other probably hexagonal.

20. *On the Effect of Impurities on the Super Conductivity of Lead.* By Professor J. C. McLennan, C. D. Niven, M.A., and J. O. Wilhelm, M.A.

Specific conductivities were determined for Lead mixed with various percentages of cadmium. Mixtures with other metals are being studied. It is expected the results obtained will throw light on the nature of superconductivity in metals.

21. *On the electrical conductivities of a number of metals not hitherto investigated.* By Professor J. C. McLennan, C. D. Niven, M.A. and J. O. Wilhelm, M.A.

The electrical conductivities of caesium, chromium, cobalt, arsenic and antimony were investigated at temperatures down to that of liquid helium.

22. *On the Intensity of the Light of the Oxygen Green Line from the Night Sky.* By Professor J. C. McLennan, J. H. McLeod, and H. J. C. Ireton.

Intensity Measurements have been made on this light, in Saskatchewan, Ontario, and Arizona, U.S.A. with a view to learning if solar radiation has anything to do with putting oxygen in the upper atmosphere in a condition to emit the light in question.

23. *On the Magnetic Resolution of the Oxygen Auroral Green Line.* By Professor J. C. McLennan, J. H. McLeod, M.A., and Dr. Richard Ruedy.
Preliminary measurements indicate that the auroral green line is resolved into a triplet with the separation of the outer components the same as that of a normal triplet.

24. *Absorption of Helium Lines in Excited Helium.* By Professor J. C. McLennan, Dr. Richard Ruedy, and Miss Elizabeth Allin, M.A.
The weakening of the light of helium lines when passed through electrically excited helium was studied quantitatively.

25. *On the influence of Argon on the Spectrum of Sulphur.* Professor J. C. McLennan, Dr. Richard Ruedy, and Leslie Howlett, B.A.
It was found that with argon mixed with Sulphur Dioxide and both gases at suitably low pressures a spectrum could be obtained with the arc lines of sulphur greatly enhanced in intensity and the spark lines suppressed.

26. *Absolute Determination of the Wave-lengths of Xenon.* By Miss F. M. Quinlan, M.A. and J. H. McLeod, M.A.
In this investigation three "etalons" of glass of different thicknesses were used in making absolute determinations of the wave-lengths of the important characteristic radiations emitted by Xenon.

27. *Infra Red Spectra.* By H. J. C. Ireton, M.A. and Miss A. Keast, B.A.
In this research the infra-red wave-lengths obtained by photography in the arc and spark spectra of elements in the Rare Metal and Rare Earth groups were measured.

B. *Researches by Professor E. F. Burton.*

I. *Temperature of Coagulation of Pure Copper Colloidal Solution.* By Professor E. F. Burton and Miss B. M. Reid, M.A.
This work is a continuation of that already published in the Journal of Physical Chemistry for March 1928. It has been found that a colloidal solution of simple type, such as a Bredig copper sol, can be coagulated by increasing the temperature alone. Samples of a solution of copper have been heated to different temperatures for different times and a very simple relation has been found between the time and the coagulation temperature.

II. *A New Method of Conductivity Measurement by Means of an Oscillating Valve Circuit.* By Professor Burton and A. Pitt, B.A.
A remarkable new effect arising from the sensitivity of an oscillating circuit to the presence of conducting materials has been found and various practical applications of this new principle have been made. The paper is published in the *Philosophical Magazine*, Supplement Number, May 1928, p. 939.

C. *Researches by Professor John Satterly.*

Surface Tension and Capillary Action.
The ridge or ripple seen on the glass wall of a tube above an ascending liquid surface is still being studied. Some unexpected results have been considered and the effects of different solutions compared. The liquid ridge on a glass wall descending through a stationary liquid surface is also under observation.

D. *Researches by Professor L. Gilchrist.*

Investigation of X-ray spectra by the method of Visibility.
A continuation of the investigation on X-ray spectra for the development of formulae applicable to the cases of certain types of crystals.

E. *Researches by Professor H. A. McTaggart.*

A research is being carried out on the formation of the dispersion of oil particles which takes place when a bubble of air in which a thin film of oil is placed is absorbed in water. The oil under certain conditions is left behind in the form of small particles which have the Brownian Movement. The conditions under which this dispersion takes place are being studied.

Physiology, under direction of Professor J. J. R. Macleod

The researches conducted in this department have, in general, been concerned with the physiology of the carbohydrates, and they may be classified as follows:—

1. The behaviour of depancreatised dogs treated with Insulin.

Two dogs from each of which the pancreas had been removed in 1923 survived under insulin treatment until February 1928, when both died within periods of five days after the removal of insulin. Up until the time of removal of insulin both animals were in perfect health, having gained greatly in body weight. Their tolerance for sugar was exactly the same in 1928 as in 1923, thus indicating that the power to metabolise carbohydrate had not been restored. Numerous studies have been made on these animals which are of considerable practical importance in the treatment of diabetes in man.

2. The influence of carbohydrate on the respiratory exchange and the ketonuria of depancreatised animals. (M. T. dePencier). By administering glucose in repeated quantities, instead of all at one time, it has been found that the respiratory quotient may rise considerably without there being any change in the excretion of ketone bodies. The former of these results corresponds to those obtained in animals poisoned with phlorhizin, but the latter does not do so, thus indicating that the animals under this drug cannot be regarded as diabetic animals, as has been the custom.

3. Observations upon the R.Q. at late stages after removal of insulin from depancreatised animals. (*Dr. S. Soskin.*)

In confirmation of Hedon it has been shown that the R.Q. may rise considerably under the above conditions, especially in lean animals, thus supporting the conclusion drawn from other investigators, that this quotient is not a dependable criterion of whether or not carbohydrates have been completely oxidised in the tissues in diabetes.

Dr. Soskin has also observed the behaviour of the excretion of ketone bodies under the above conditions.

4. The relationship between glycogen disappearance and lactic acid formation in mammalian muscle immediately after death. (J. C. Thomas.)

Continuing the work of Macleod and Simpson, it has been found that glycogen disappears after thawing muscle frozen in liquid air, with great rapidity, while lactic acid only slowly accumulates. The intermediate substance which these results indicate must be formed is not glucose, neither does it appear to be any compound of phosphoric acid, such as lactacidogen.

5. The behaviour of the R.Q. in the decapitate cat preparation after removal of the abdominal viscera. (Dr. L. G. Kilborn.)

As has been shown by Dale and Burn, this rises from 0.7 to 1.0 or over, after evisceration, but this has been found to be due, not to the establishment of an exclusive carbohydrate metabolism, but rather to the "blowing off" of CO_2 from the blood and tissues. The evidence for this interpretation has been furnished by examination of the blood and also by the fact that when excessive elimination of CO_2 is prevented, the quotient does not rise. The demonstration of these facts

is of considerable importance, since Burn and Dale's results have been given great weight as indicating that muscular energy depends solely on combustion of carbohydrate. It may be of interest to state that Dr. Kilborn is professor of Physiology in the University of Chengtu, West China.

6. The behaviour of glycogen in the muscles of the decapitate cat preparation before and after stimulation. (Miss M. E. McKay.)

Very rapid utilisation of glycogen even following very slight contraction and, on the other hand, its remarkable stability when the muscle is kept in a condition of absolute rest, has been investigated.

7. The behaviour of inorganic phosphoric acid. (Dr. L. Irving and Mr. G. M. Bastedo.)

Dr. Irving and Mr. Bastedo have been following the behaviour of inorganic phosphoric acid and of the newly discovered phosphagen in mammalian muscle under varying physiological conditions. Several important facts have been established, with regard to the relationship between this substance and muscular activity.

8. The behaviour of calcium in the blood and its rate of excretion by the intestine in normal animals as compared with those from which the parathyroid glands have been removed. (Dr. N. B. Taylor and A. Fine.)

It has been found that very little calcium is excreted by the intestine in normal conditions, but that this is increased after parathyroidectomy.

9. The nature of the temporary paralysis which becomes established in the nervous centres following electrocution. (Drs. E. C. Noble and R. W. I. Urquhart.)

Following up Urquhart's research, which showed that the respiratory centre is temporarily paralysed by the passage of an alternating current through it, it has now been demonstrated that a similar condition of temporary block becomes established when the current is sent through the lower levels of the spinal cord, or through the sciatic nerve. The results fortify the conclusion that artificial respiration should be applied in cases of accidental electrocution in man.

Political Science, under direction of Professor E. J. Urwick

It was proposed in the last report to continue the general study of the basic industries of Canada, concentrating on the industries which are of especial importance to the Canadian shield. During the summer of 1927 most of the pulp and paper mills, the lumber mills, and the mines in the provinces east of the Ontario-Manitoba boundary were visited, and extensive notes made on the problems of the industry of the district, and as far as possible of each mill and mine. During the academic year of 1927-8 the students have been assigned various subjects covering the pulp and paper and the lumber industries. These studies will be made available, probably in July, as in the case of the fur trade, to those engaged in the industries and to others interested in their particular problems. It is hoped through the issue of these studies to gain further knowledge of the problems by direct contact with the industries. The more important results will be included in one or two volumes on the pulp and paper industry and on the lumber industry, similar to that published on the fur trade. It is hoped that these volumes will be available in 1928-9.

Next year it is proposed to continue a study of the industries of the Canadian shield, including mining, water power development, agriculture, and the tourist traffic. To carry out this programme it will be necessary to visit some of the less remote mines and plants which, through lack of time, it was found impossible to visit last summer.

As already stated, the volume on the fur trade was published in the summer of 1927. The second volume (the history of the fur trade), has not yet been published. Demands on the publication fund will not become urgent until the summer of 1929. Consequently, it has been proposed that the needs of Canadian economic research would be met by attention to the urgent demand for a publication, which would include short articles on Canadian economics, in addition to reviews of the more important publications and a detailed bibliography of articles and works pertaining to Canadian economics. This cannot pretend to be regarded as an annual publication, but it is seriously hoped that sufficient support will be given to warrant the appearance annually of a volume of this character, and that eventually it should be extended as an authoritative journal in Canadian economics, in which valuable articles may be published. The Canadian Historical Review is the only medium in Canada in which the articles can appear at present, and it is unfair to encroach on the kindness of the editor of that journal and to encroach on a medium which is designed specifically for history. Articles published in scientific journals of the United States and Great Britain are scattered and difficult to locate. A volume of probably 100 pages has been planned for issue in June under the title "Contributions to Canadian Economics," which will include articles and reviews of more valuable works and a bibliography.

The indirect advantages of research emphasised in the last report may again be suggested. We have had the cooperation of a large number of men directly engaged in the forest industries, and of men in the government departments, and this has been especially the case with the course of lectures arranged by Professor Jackson in Business Administration in the current year. New books have been added to the library, and we have had the advantage of full cooperation from the Faculty of the Forestry School. The Department of University Extension has again been of the greatest assistance in the handling of the material.

Psychology, under direction of Professor E. A. Bott

Professor Bott—Time relations of voluntary antagonistic muscular contractions.
" " —with Messrs. Branion and Evans—Vertical antagonistic deviation of the eyes.
" " with Dr. G. Cosgrave—Relative legibility of printed characters.
" " with Mr. C. N. Clark—Disparity in stimulation of the retinae due to pupillary changes, and its relation to binocular rivalry.
" " with Mr. D. J. Wilson—Reaction time to simple musical scores as a factor in the ability of sight reading.

Professor MacPhee—Problems in the practical classification of dull public school children.
" " —Construction of a short Grade-Placement Scale for use in schools and clinics.
" " —Annotated bibliography of psychological factors in the learning and teaching of Modern Languages.
" " with Professor Chant and Mr. K. Bernhardt—Statistical study of factors affecting the standing of a group of university matriculants.
" " —Investigation of the causes of disparity between the performance and ability of public school children.
" " —An experiment in the Dalton plan of instruction.

Professor Blatz—Studies of misdemeanors among public school children—continued.
" " with Miss H. M. Shepherd—Analysis of behavior of 'good' and 'bad' children.

Professor Blatz with Dr. L. F. Coates—Study of mannerisms, tics and choreic movements in young children.
" " with Miss C. Langstaff—Methods of solving problem situations by pre-school age children.
" " —with Mrs. S. W. Leslie—Follow up records with a group of delinquent children.
" " with Miss J. A. Parker—A comparative study of controlled groups of legitimate and illegitimate foster children.
Professor Chant with Mr. K. Rogers—The presence of perseveration in motor responses.
Mr. J. D. Ketchum—The study of boy gangs and companionships in a selected urban neighbourhood.

Radiology, under direction of Dr. G. E. Richards

In conjunction with the department of medicine, a research problem was undertaken to determine the size, shape, etc., of the heart and great vessels in 100 patients with syphilis. A somewhat similar series of investigations of the heart was undertaken in the later weeks of pregnancy and after delivery. The results will be published.

A somewhat similar study was made of the size, shape, and position of the heart during the later weeks of pregnancy and shortly after delivery, to determine certain facts which have long been in more or less doubt. This work has just been completed but will not be ready for publication for some time.

Therapeutics, under direction of Dr. R. D. Rudolf

A good piece of research on the action of Sodium Sulpho-cyanate is being done by Dr. A. G. Smith, the Research Fellow, which promises to be of great clinical value.

REPORT OF THE COMMITTEE FOR EXPERIMENTAL RESEARCH IN MEDICINE

(*Dr. D. E. Robertson, Secretary*)

I have looked over the book of experiments, and the work done in the laboratory of the committee for experimental research for the current year. I find there have been 671 animal experiments, 246 autopsies and 100 microscopic sections made by Cowan.

This work was done by the following members of the staff:

Dr. Shouldice, who was studying Intestinal Intoxication.
Dr. Price,—Tuberculosis.
Dr. Paul Scott.
Professor Hunter and his associates.
Dr. W. L. Robinson.
Professor Harding.
Professor Klotz and his associates.
Dr. A. B. LeMesurier—A study in the blood supply and palate.
Dr. Costain—Some studies in lymphatics.

The money which has been placed at our disposal for this experimental research has filled a most urgent need in connection with the activities of our university staff. More particularly is this the case among our younger men who are capable of carrying out research work, and who would, in the absence of this fund, be unable to afford the necessary expenditure.

THE SCHOOL OF ENGINEERING RESEARCH

During the past year the work of the School of Engineering Research has again proved the immense value which this research movement has for the training of men in research and in the carrying out of investigations, some of a fundamental character dealing with scientific principles, and some aiming at the securing of information directly applicable in industry or in engineering practice.

We are apparently on the verge of a most desirable and long overdue expansion of industrial research both in this province and the Dominion as a whole, due to direct governmental assistance. This new era of industrial development, through organised investigation, must increase very shortly the demand for investigators who have had experience in research in the various branches of science, both pure and applied. In the inauguration of this research movement by the government, it is most fortunate that skilled men are to some extent to be found in the country, capable of carrying on research work of a high order, many of whom have had their training in the School of Engineering Research. However, the number of such men available is still small. This makes it the more necessary to maintain and expand the activities of the School of Engineering Research as one important source of the personnel without whom the proposed expansion in research cannot be carried out.

Thus the activity of the School of Engineering Research is, in a very real sense, complementary to the work of the proposed and existing government research agencies.

It should be borne in mind also that this is only one of the benefits arising from the School of Engineering Research. The reaction upon both staff and students has been marked and has stimulated to a high degree the research spirit in both.

In addition results of very considerable value to industry and to engineering practice have been obtained and considerable progress has been made in the solution of some very difficult and important fundamental problems.

Thus as an agency for the training of research men, for the obtaining of new and useful information through experimental investigation and in the development of the spirit of research among faculty and students, the School of Engineering Research is amply justifying its existence.

Department of Civil Engineering

Under the direction of Professor L. B. Stewart.

During the past session a further investigation of the catenary curve as applied to base measurements has been made, continuing the work of the previous session as described in *Bulletin* No. 7 of the School of Engineering Research. A single expression has been obtained by which all of the corrections to be applied to the natural length of a tape may be found, except that for temperature, in one operation. Further work is necessary, however, in order to place it in a more practical form.

Under the direction of Professor P. Gillespie.

An experimental investigation on the strength of welded joints is being carried out in co-operation with the American Bureau of Welding, the Bureau of Standards at Washington, and the Engineering Colleges of United States. Two thirds of the 342 tests to be carried out at Toronto have been completed. The completion of the series and the analysis of the data is at present under way. A part of the cost of this investigation is being borne by the National Research Council of Canada.

Under the direction of Professor C. R. Young (with W. B. Dunbar, C. E. Lewis, H. J. A. Chambers and E. B. Allan).

Investigations respecting the economic proportions and behaviour of transmission towers under load as disclosed by a model have been completed and three papers were published in *Bulletin* No. 7 of the School of Engineering Research.

With W. B. Dunbar—Experimental investigation of the value of rivets in tension and in combination of tension and flexure were carried out, and a paper on the subject has appeared in many technical journals. A beginning was made with the investigation of rivets subjected to a combination of tension and shear but this investigation will not be concluded during the present year.

With W. B. Dunbar—In co-operation with the Sewer Section of the Department of Works, City of Toronto, an investigation is being conducted to disclose the actual realised pressures on the deep sewers of the new North Toronto system. Many pressure cells are in position and readings are being taken at regular intervals. A paper dealing with the matter will probably appear in the course of the next year.

Under the direction of Professor T. R. Loudon.

An investigation of the stress distribution in riveted tension members is in progress.

A deduction formula for riveted tension members has been devised.

Under the direction of Prof. G. R. Anderson (with K. B. Jackson and C. A. Morrison)

An investigation is being made of the flicker of lamps operated on 25 cycle current. This work which was commenced last summer is now yielding results of considerable interest.

Department of Mining Engineering

Under the direction of Professor H. E. T. Haultain (with Prof. Dyer).

The photographic work on ball paths in tube mills has been reviewed with improved apparatus, completing a new set of photographs covering the whole subject.

With Prof. Banting—A simplified and improved high speed centrifuge and its accessories has been devised and a photographic method developed for determining its speed which is between 80,000 and 90,000 r.p.m.

Under the direction of Professor F. C. Dyer.

Tests are being conducted on Ontario graphites with the object of producing a high grade graphite for use in dry cell manufacture.

An improvement has been made in the design of a deck for a wet concentrating table which gives greater capacity. The table is now being tested under commercial conditions.

A new porous medium constructed from linoleum has been made for use as a blanket in flotation cells.

An apparatus has been designed, based on surface tension for the automatic control of oil in flotation and is now being tested.

Under the direction of Professor J. T. King.

An investigation of the assay losses caused by tellurium is in progress.

Department of Mechanical Engineering

Under the direction of Professor R. W. Angus.

With G. L. DeLaplante and H. E. Saunders—"Orifice coefficients for steam meters".

With C. A. V. Armour—"The effect of air leakage on the efficiency and discharge of a centrifugal pump".

"Friction loss in suction lines of fire hose".

"Coefficients for an unusual Venturi meter".

These researches have been completed and the papers will be published in the next *Bulletin*.

An investigation on the Effect of Turbulence on the Rate of Heat Transfer has been carried out, and a paper will be published in the *Bulletin* of the School of Engineering Research. This paper was read before the American Society of Heating and Ventilating Engineers and published in their Journal for July, 1927.

Under the direction of Professor J. H. Parkin.

(1) Interference Research—A study of the interference effects between wings and fuselage of aeroplanes. Three types of fuselage and two wing sections were employed in a number of different arrangements. Marked interference was found in certain cases.

This work has been continued this summer, using a third wing section.

(2) Undercarriage Investigation—A study of the interference effects of different types of undercarriage, wheel, ski and float, on the aircraft performance has been started.

(3) International Models—The drag measurements on the International Airship models were made last winter. These models are being tested in the different laboratories of the world in order to establish the relationship of measurements made in different laboratories.

(4) Flying Boat Stability—The investigation of the stability of the Canadian flying boat "Vedette" has been started.

Under the direction of Professor E. A. Allcut.

Research on uniflow steam engine was completed and paper read at the Annual Meeting of the E.I.C. The temperature research on two stroke oil engine was continued with platinum resistance thermometers. Further work is now being done with fine thermocouples, the E.M.F. being amplified to operate an oscillograph.

Department of Chemical Engineering

Under the direction of Professor J. W. Bain (with L. J. Bohn).

As a result of researches carried on last session a paper was published in the *Jour. Amer. Chem. Soc.* **49**, 2734 (1927) entitled "The System Potassium Carbonate, Sodium Carbonate and Water at 40° and the Trihydrate of Sodium Carbonate." A study has been made this session of the last mentioned compound, but the results are not yet complete.

With E. A. Smith, J. W. Brock and C. F. Burk—The investigation of the lignosulphonic acids of waste sulphite liquor has been continued and some analytical difficulties have been satisfactorily solved. The action of sulphur dioxide upon lignin is being carefully investigated but the research is still in an intermediate stage.

With J. G. Little—Further progress in the study of the action of heat upon cellulose has been made.

Under the direction of Professor E. G. R. Ardagh (with L. A. Richardson and R. E. Richardson).

The study of the properties of precipitated barium sulphate has been continued.

With C. M. Furber—A study has been made of the problem of removing thiophene from commercial benzol.

Under the direction of Professor M. C. Boswell (with C. W. Small).

The use of reduced sulphides as catalysts is being investigated.

(With G. P. Beal and W. C. Macdonald)—The properties of a new catalyst which was discovered during the past session are being investigated. By means of this catalyst waste sulphur dioxide can be quantitatively reduced to elementary sulphur. This should be useful in the recovery of sulphur from waste smelter gases.

Department of Electrical Engineering

Under the direction of Professor T. R. Rosebrugh.

A General Theorem on Quantic Determinants—was published in the *Bulletin* of the American Mathematical Society for September, 1927. This investigation was suggested by studies in connection with the theory of the Transmission Line. It led to the proof of this general theorem in Determinants of which already known theorems by Kronecker, Scholtz and Faa de Bruno prove to be particular cases.

The Binary Linear Substitution of Determinant Unity in Problems of General Dynamics, Acoustics and Electricity—Proceedings of the International Mathematical Congress, 1924, Toronto, 1928 (in abstract).

Calculation of Long Transmission Systems—Proceedings of the International Mathematical Congress, 1924, Toronto, 1928 (in abstract).

Under the direction of Professor H. W. Price (with C. Kent Duff).

The investigations of an automatic control of frequency, seconds clock of highest constancy, temperature control of rooms, and various incidentally involved subjects, have been proceeding. Several very troublesome phases of these problems have been solved, and apparatus is now being constructed to demonstrate and chart the operating characteristics to check our work.

(11) PUBLICATIONS

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Observations on the Brain of the Humming Bird (Chrysolampis mosquitus Linn. and Chlorostilbon caribaeus Lawr). (Jour. Comp. Neur., vol. 45, pp. 401-493).

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(12) REPORT OF THE LIBRARIAN

(W. S. Wallace, Esq., M.A.)

I beg to submit the following report on the work of the University Library for the year ending June 30, 1928:

The number of volumes added to the Library during the year has been 10,114, and the number of pamphlets 6,765. The total number of bound volumes in the Library is now 230,463, and the total number of pamphlets 83,641.

The statistics of the use of the Library by undergraduates, in comparison with previous years, are as follows:—

	1921-22	1923-24	1926-27	1927-28
Day books	41,928	80,172	106,485	117,316
Night books	18,998	31,314	39,779	47,390
Week books	4,792	12,316	13,014	15,478
Totals	65,718	123,802	159,278	180,184

These figures do not take into account the large number of books taken for consultation from the reference shelves, of which over 12,000 were during the year replaced on the shelves by the Library assistants.

There has been an increase also in the use of the Library by graduates. Whereas there were in the graduates' register only 497 names five years ago, and only 765 names two years ago, the total number of names in the graduates register is now 1,024. These names are of course exclusive of those of the professors and officers of the University, which are kept in a separate register. The total number of books borrowed by both professors and graduates during the past year has been 26,709, an increase of approximately 25 per cent. over the previous year.

The striking increase in the use of the University Library during the past few years, in the face of an almost stationary registration of undergraduates, deserves an attempt at explanation. The causes of it have been, no doubt, several. In the first place, it would appear that there has been a change in the methods of instruction employed in several departments of the University, so that students are now directed to a number of different books, where formerly they were expected to read only one or two text-books. This change has been particularly noticeable in two or three departments, where the instructors have pursued the policy of providing the Library with the reading lists which they distribute among the students. In the second place, the removal of Trinity College from its old home on Queen Street to the new site in Queen's Park, in close proximity to the University Library, has brought to the doors of the Library a considerable number of undergraduates who formerly used it very little or not at all. In the third place, an effort has been made by the Library staff to advertise the services which the University Library offers. It was discovered that undergraduates sometimes reached the second year in the University without actually knowing where the University Library was. By lectures, circulars, signs, and other means, an attempt has been made to bring the Library more immediately to the attention of undergraduates, and the results have been so noticeable that on two or three occasions it has been found necessary to desist from further publicity for fear that the resources of the Library would be insufficient to meet the demands made upon them. But after all, the most effective kind of publicity is satisfactory service; and in this connection I should like to say that, in my opinion, no small factor in the increase in the use of the Library has been the rapid, efficient, and cheerful manner in which the Library assistants have discharged their duties. On many days the assistants at the delivery desk have given out over a thousand volumes, and have taken in and shelved an equal number; and at times the rate at which books have been given out has been on an average of eight a minute.

Once more I must bring to your attention the congestion in the stack-room of the Library. Although last summer the medical books and periodicals were removed from the stack-room and placed in the new medical reading room, the relief obtained from this removal was only of the most temporary character. Early in the New Year it became once again impossible to put books away in their proper place without considerable shifting. In order to provide further space, it has now been decided to place in a room in the basement of the Library building the books belonging to the Royal Canadian Institute, for which the University has for many years provided accommodation, and which are a very valuable

addition to the University's resources in scientific periodical literature. This will give us room for expansion in the stack for perhaps two more years; but at the end of this period we shall be faced with a situation beyond which any further expansion will be impossible, until additional stack-room is provided. I cannot emphasise too strongly the fact that, under the congested conditions prevailing, it becomes increasingly difficult for the Library staff to give the most efficient service, and increasingly expensive to administer the Library resources. If we are to avoid in the very near future a situation in the University Library which will affect adversely every department in the University, it is essential that we should face without delay the problem of extending the Library building.

(13) REPORT OF THE ACTING DIRECTOR OF THE DEPARTMENT OF SOCIAL SERVICE

(Professor E. J. Urwick)

During the whole of the past session the Director, Professor J. A. Dale, has been absent through illness. The work of the department has, nevertheless, proceeded satisfactorily. The graduating class has fulfilled its earlier promise, and has proved to be an unusually keen and able class. Thirteen students obtained the diploma, and three others passed the examinations subject to a single condition. The value of the training has been shown in marked degree by the fact that every member of the graduating class who was ready to engage in professional social work was successfully placed at once in one or other of the social agencies of Canada. The demand for well-trained workers appears to be increasing much faster than the supply; it is evident, therefore, that more students of good capacity must be enrolled if the high standard of both voluntary and professional social work in the country is to be maintained. This need was strongly emphasised at the first National Conference of Social workers held at Montreal in May; and the Acting Director of this department was entrusted with the task of forming a representative committee to deal with the whole question of training and recruiting of social workers.

The Alumni Association of the department has continued to show its active interest in the welfare of the department by offering to give any help in its power to compensate for the absence of the Director. The offer was gratefully accepted by the staff; and, as a result, a permanent committee of old students has now been formed to assist the staff in the organisation of the department's work.

Former graduates continue to contribute to the social researches of Canada. Especially noteworthy during the past year have been the report by Mrs. McGregor on immigrant children, and the co-operation of two other graduates in the important social survey of British Columbia.

(14) REPORT OF THE DEPARTMENT OF PUBLIC HEALTH NURSING

(Miss E. K. Russell, B.A., Director)

The report for the session 1927-28 becomes also the report of the first year's work done by this department as a section of the School of Hygiene. This new association has given for the work of the department much greater opportunity and support, the benefit of which has been noted with deepest satisfaction and gratitude throughout the year.

The two diploma courses of the department, described respectively as the one-year course and the four-year course, are now being carried on simultaneously and with this development the department has entered upon the double task of

teaching and research. The one year of training enrols fairly large classes and is designed to meet the immediate needs of the community by providing sufficient workers for these. The four year training has but the one purpose and that is to serve as a carefully controlled experiment in education: for this reason the enrolment will be kept very small. The new four-year course is leading into difficult problems, particularly on account of the involvement with the hospital school. It appears that the department will need further resources for the development of this experiment.

The work done for foreign students and visitors has been more extensive than in any previous year. Nine were enrolled in the diploma course (three from Jugo-Slavia, two from Czecho-Slovakia, one each from Austria, France, the United States and Roumania) and, in addition, a constant stream of short term visitors from many different countries came to the department.

The work with the new course together with other developments of the year indicate that this department is being forced into rather rapid progress. The latest factor in this situation is the new course being started in the University for nurses preparing for teaching and administrative posts in hospital schools. Although the department of University Extension is accepting administrative responsibility for this newest course at present, it is, nevertheless, impossible to keep separate the various efforts toward nursing education for which the University is offering facilities. This year's experience indicates more clearly than ever before that the university's work in this direction should build up a school which will give to the nursing profession of Ontario an advisory and auxiliary service to supplement, not to supplant, the efforts of the present hospital schools, to help provide them with teachers, to meet the immediate needs of new branches of nursing such as public health nursing and, above all, to provide a laboratory in which the many educational problems of this rapidly developing profession may be carefully studied.

(15) REPORT OF THE DEPARTMENT OF UNIVERSITY EXTENSION AND PUBLICITY

(W. J. Dunlop, Esq., B.A., B.Paed.)

To say that there were enrolled in the various courses and classes this year 3,161 students is to give at least one indication that this has been a remarkably good year in this department. Of the number mentioned, 395 were in the Teachers' course; 28 were taking the Specialists' courses; 40 were in the course in Occupational Therapy; 490 were taking correspondence courses; 1,267 took evening classes at the University; 83 were members of rural tutorial classes; 235 took short courses; and 623 took Workers' Educational Association classes in Brantford, Hamilton, Toronto and Windsor; of the total number 1,322 were men, and 1,839 women.

In all of these courses and classes substantial work was done. Special mention should be made of the Teachers' course in which, during the year, fourteen men and women graduated with the degree of B.A. Ninety-nine new students entered the Teachers' course during the year, which is a gain of thirty admissions over the previous year. In the past eight years 158 teachers have graduated in this course, and a great many of these have secured promotions of various kinds, some of them being already Inspectors of Public Schools.

Last year, at my request, the Board of Governors authorised a change in the method of conducting Extension classes. At that time some of those interested in the Workers' Educational Association feared that the new scheme would work to the detriment of the organisation. However, this has not been the case but, on the contrary, there have been this year, in the two types of evening classes,

more than twice as many students as there were last year. So the experience of this year has shown that the change asked for and approved last year was by all means in the interests of the general public as well as of the University.

Another change which the Board of Governors authorised last year was the equalisation of costs of Extension lectures. Under the old plan organisations in Toronto were able to secure Extension lectures at a very much lower rate than could organisations in other parts of the Province. This year every club, society, or organisation of any kind, no matter where situated in the Province, has paid $10.00 per lecture, and the University has assumed the travelling expenses of the lecturers. The result has been that series of lectures have been given in Fort William, Port Arthur, Chapleau, Ottawa, and other places where, under the old plan, the cost of a lecture was prohibitive. On the other hand, not nearly so many lectures have been asked for in Toronto, the reason being that a great many people in that city feel that they should not have to pay for lectures because, for so many years, they have received them free or for $5.00 each. Perhaps one may be pardoned for saying that such people have been spoiled. The present plan is the only logical one that the Provincial University of Ontario can logically operate, and it is a satisfaction to know that the present arrangement costs the University little, if anything, more than the previous one did.

The members of the staff who gave Extension lectures this year are as follows: Dr. W. E. Blatz 29, the Director 25, Professor J. H. White 20, Professor T. F. McIlwraith 20, Professor E. Goggio 11, Dr. G. D. Porter 8, Principal M. Hutton 7, Dr. G. W. Brown 6, Dean C. D. Howe 6, Dr. R. D. Defries 5, Mr. A. Lismer 5, Professor W. A. Parks 5, Professor H. S. McKellar 4, Professor E. S. Moore 4, Dr. Neil McKinnon 4, Dr. C. A. Chant 3, Professor G. A. Cornish 3, Professor E. A. Dale 3, Mr. W. J. K. Harkness 3, J. H. Iliffe, Esq. 3, Miss A. L. Laird 3, Dr. E. J. Pratt 3, Miss G. I. Wookey 3, Professor E. F. Burton 2, Dr. A. P. Coleman 2, Dean N. DeWitt 2, Professor W. A. Irwin 2, Professor G. E. Jackson 2, Professor J. F. Macdonald 2, Professor N. McKenzie 2, Professor C. B. Sissons 2, Dr. A. Brady 1, Professor G. S. Brett 1, Professor J. Cano 1, Dr. W. H. Clawson 1, Professor J. F. Davidson 1, Miss F. H. M. Emory 1, Professor B. Fairley 1, Dr. H. A. Innis 1, Professor G. M. Jones 1, Professor H. R. Kemp 1, Professor D. R. Keys 1, Professor R. S. Knox 1, Professor A. T. Laing 1, Professor E. D. MacPhee 1, Professor L. B. Pearson 1, M. Poirier 1, Professor P. Sandiford 1, Professor R. K. Young 1, Dr. G. E. Smith 1.

The total number of lectures was 219, which were distributed as follows: Acton 1, Barrie 4, Belleville 2, Bowmanville 2, Brantford 4, Brockville 4, Chapleau 2, Clinton 6, Cobourg 1, Englehart 1, Fort William 5, Galt 2, Guelph 2, Hamilton 14, Harriston 4, Kitchener 2, Lindsay 2, London 2, Midland 2, Myrtle Station 2, New Toronto 1, Niagara Falls 1, North Bay 1, Norval 1, Oakville 1, Orillia 3, Ottawa 15, Owen Sound 1, Peterborough 6, Port Arthur 5, Port Colborne 7, Port Hope 1, St. George 1, St. Thomas 2, Simcoe 1, Stratford 1, Thornbury 1, Toronto 99, Watford 1, Welland 3, Windsor 2, Woodstock 1.

All these particulars are given to show how widespread is the work of University Extension. Each year a considerable increase is noted and the policy is to produce a steady and consistent development rather than anything in the nature of a mushroom growth.

There is another sort of service which this department renders the public. It is a service which involves much labour but which cannot possibly be reduced to statistics. It is the answering of questions. There seems to be no conceivable question of an educational nature which is not asked of this department in the course of the year. These questions come daily by letter, by telephone, and by personal call. Parents ask for educational advice on behalf of their children; teachers and others ask for advice on behalf of themselves; individuals throughout the Province ask for information on anything and everything that they think

may have some connection with the University. All questions are answered, and apparently the answers are satisfactory.

The two-years' course in Occupational Therapy which is conducted by this department has now been in operation for two years and is meeting a very definite need. Thirteen young women graduated in June with a University diploma and seven, who have supplementals to write off, will probably complete the course in the autumn. All of these have been offered excellent positions by the Ontario Government and more than half have accepted these positions, but the others have found elsewhere posts which they consider more desirable. If we could have graduated twice as many there would have been openings for them all.

The new one-year course for Graduate Nurses in Teaching and Administration is to commence in September. Already there are a good many applications for it.

The work in publicity has this year followed the usual lines. Numerous items of news have been supplied to the daily newspapers; articles have been written for various specialised periodicals. A good many bulletins have been published—one on lighting for the department of Photography; one for the department of Architecture; one for the Royal Ontario Museum of Archaeology; one on "Opportunities for Graduates in Applied Science and Engineering"; one for the Royal Ontario Museum of Zoology; one on Extension Lectures; as well as a great number of less pretentious pamphlets and leaflets which were given a wide distribution.

As usual an exhibit was arranged in the Ontario Building at the Canadian National Exhibition, which attracted a great deal of attention. It is probably safe to say that no legitimate means of publicity is at any time neglected.

(16) REPORT OF THE DEPARTMENT OF MILITARY STUDIES

(Brig.-Gen. G. S. Cartwright, Director)

As requested in your letter dated 14th March I have the honour to submit the following report on the work of this department during the session 1927-28:—

Enrolments	Arts	S.P.S.	Dent. & Med.	For.	Teachers	Total
1. Juniors (II Arts)	28					28
2. Intermediates (III Arts)	15					15
3. Seniors (IV Arts)	24					24
4. Special (2, 3, 4 years, for students unable to attend 1, 2 or 3.)	34	35	21	3	1	94
5. Medical			10			10
6. Artillery	4	13		2		19
						190

The course in Artillery which was started last year was continued and those attending it showed great keenness, and the results of the practical test were very satisfactory.

In November 1927 the number shown below passed the War Office examination:—

4 obtained Cert. "A", Infantry (O. T.C.)
2 " " "B" " "
1 " " "A" Artillery "

In February 1928, the practical portion of the O.T.C. examination was held and the following successfully passed this test:—

9 passsed Pt. I, Cert. "A", Artillery (O.T.C.)
55 " " " "A", Infantry "
16 " " " "B", " "
1 " " " "A", Medical "
5 " " " "B", " "

Of these, 80 presented themselves for the written examination on the 13th and 14th March and the results—which have now been received from the War Office—are satisfactory, viz:—

5	candidates	obtained	O.T.C.	Cert.	"A", Artillery
41	"	"	"	"	"A", Infantry
14	"	"	"	"	"B", "
5	"	"	"	"	"B", Medical

Seven students completed their course of training with the Royal Canadian Air Force last summer and are entitled to wear the wings; one of whom—J. T. Dyment, Applied Science—took first place and was awarded the Sword of Honour for the course 1925-27 for best all-round showing. Three students who attended the first year course at Camp Borden and one who attended the second year course have been recommended to continue their training this year. Four students have been accepted for first year training this summer.

As reported last year, the need of a drill shed for the practical training is still greatly felt during the winter months.

(17) REPORT OF THE UNIVERSITY HEALTH SERVICE (MEN)

(George D. Porter, M.B., Director)

I.

Examinations.

All the first and second year students were examined as usual during the early part of the fall term.

Total number of first and second year men	1,362
Those in senior years examined	333
Re-examined by specialists	54
Total number of complete examinations	1,749

All those taking part in athletics also came up for examination during the year.

Results.

1.	Those found fit for physical training	94.3%
2.	Those having some disability requiring supervised or light exercises	3.3%
3.	Those unfit for physical training or athletics	2.4%

This is a better showing than that of last year.

Illness during the year.

This year we have had more infectious diseases amongst the student body than for some years. There have been two small outbreaks of smallpox during the year. In the fall there were seven cases in Victoria College and later on one in Knox College. Proper quarantine and vaccination were instituted by the city health authorities with the best co-operation of the university staff and the students. Mumps have also been very prevalent this year. Twenty-six cases occurred amongst the first and second year students, as well as those cases in the senior years. While fortunately none of these epidemics have been serious in themselves, they have made serious inroads into the class work of the patients and of the contacts who were quarantined.

The occasional infectious skin diseases which are so apt to occur among the students, are controlled by special care of the showers and gymnasium premises and also by the sterilisation of the towels.

Dispensary Service.

Many calls are made at the Director's office for emergency treatment for injuries received on the campus and elsewhere. There are also a great many who come in for advice and for re-examinations during the year. This not infrequently brings to light some infectious disease in its incipient stages which would otherwise spread among the students.

Special and supervised classes.

During the year regular classes are held for those with some disability requiring corrective treatment and for those unable to take the regular physical training and athletics.

Education.

Lectures on First Aid and Hygiene are given to the first year medical students and to the forestry students. Also lectures on Artificial Respiration to those taking part in the Life Saving Classes. A course of lectures is also given on Hygiene to the classes in Occupational Therapy.

A great many students come in for personal advice on health matters which proves a very effective way of educating them in personal hygiene.

Illness and accidents occurring during the year for which exemptions have been granted from Physical Training Classes or those of the Officers' Training Corps amounted to 569, slightly less than last year. These exemptions were for from one day to a whole term. The time lost this year was slightly more than usual owing to the greater prevalence of infectious diseases.

The various causes were as follows:

Colds	184
Influenza	22
Bronchitis	11
Laryngitis	3
Tonsillitis	22
Pharyngitis	14
Sinus Infections	5
Otitis	4
Eye trouble	1
Adenitis	2
Dental trouble	10
Neuralgia	1
Asthma	4
Pleurisy	3
Tuberculosis	2
Pneumonia	3
Smallpox	7
Measles	6
Pyelitis	2
Renal Calculus	1
Mumps	26
Rheumatism	5
Jaundice	1
Migraine	6
Gastralgia	9
Epistaxis	2
Abscess	1
Local Infections	10
Hernia	2
Appendicitis	1
Skin Diseases	
Erythema	2
Ringworm	3
Scabies	2
Eczema	3
Boils	15
Injuries	
Fractures	9
Sprains	61
Cuts	4
Contusions	14
Abrasions	1
Blisters	9
Operations:	
Appendicitis	1
Varicocele	1
Nasal	2
Tonsils	3
Blood transfusions for patients	2
Vaccinations	67
Total	569

REPORT OF MEDICAL ADVISER OF WOMEN

(*Dr. Edith Gordon*)

II.

In spite of the fact that in October the Medical Office found itself in more cramped quarters than ever before, the past year has been the largest in its history. Owing to the growth of the Faculty of Household Science it was necessary to give up the Medical Office to that faculty, and make the examining room serve triple purposes; examining room, medical office and waiting room. It has meant conducting the medical service for the women under a distinct handicap, and it is sincerely to be hoped that another year will see the medical office established in more suitable quarters.

Physical Examinations.—During the year, 737 physical examinations have been made. Of these 368 were required of the entering women in University College, Medicine, Household Science, Architecture, Dentistry, The Ontario College of Education and the Department of Occupational Therapy. The remaining 369 examinations represent all faculties, colleges and departments of the university, and were voluntary on the part of the students.

The physical fitness of all the women was gratifying, as is seen in the following tables:

Group A. Compulsory Examinations (entering women students of University College, Faculties of Medicine, Household Science, Architecture, Dentistry, The Ontario College of Education and Department of Occupational Therapy).

Number examined	368
1. Students physically able to take physical training	88%
2. Students requiring supervised or corrective exercises	9%
3. Students unable to take physical training (temporarily or permanently)	3%

Group B. Voluntary examinations. All years are here represented.

1. Students physically able to take physical training	87.6%
2. Students requiring supervised or corrective exercises	8.1%
3. Students unable to take physical training (temporarily or permanently)	4.3%

The classes for the correction of remediable defects of posture, feet, etc., have been ably carried on under the direction of Miss Coventry. This work has been done in a very inadequate room, without proper light or ventilation, and with insufficient space for its needs. The Faculty of Household Science is asking for the use of this room, and unless space elsewhere is provided, this very important work will have to lapse.

Re-examinations of 56 students were made and improvement noted. Special examinations for those participating in sports is required by the Women's Athletic Directorate. Large numbers of these were made on the members of the interfaculty, basket-ball, baseball, hockey, and swimming teams.

It indicates the value that the students place upon the service which the medical office offers, to find students returning year after year for physical examinations. There were one hundred and thirty-nine (139) who had second examinations; seventy-five (75) who underwent the third; and forty-eight (48) their fourth; eight (8) their fifth; and three (3) their sixth physical examinations. The improvement in these cases was noted and is tabulated beneath:—

Slight improvement	63.4%
Marked improvement	6.9%
No improvement	13.6%
Retrogression	16.1%

The defects found upon examination fall into three groups:—

1. Preventable and correctable defects (Poor posture, faulty menstruation, functional spinal curvature, weak feet, constipation, etc.)	56.6%
These defects could be corrected by remedial exercises and proper personal hygiene.	
2. Defects that could be corrected by treatment, operation, etc. (diseased tonsils, eye defects, diseased teeth, etc.)	33.6%
3. Defects that are uncorrectable, but that could be prevented from becoming more marked	10.8%
or developing into more acute conditions (organic heart lesions, organic spinal curvature, chest conditions, etc.)	
Total number of defects	1352

Consultations.

There have been 1854 consultations. The larger number of these have been with students seeking advice regarding personal hygiene and how their efficiency may be maintained. A considerable number of students report at the onset of an

illness, and many receive treatment for injuries, and simple conditions which might otherwise be neglected. During the fall term there was an outbreak of smallpox on the campus and three hundred and forty four (344) vaccinations were performed. Occasional requests for vaccination or the administration of vaccines or hypodermics of iron came through the year, and the medical office is glad to cooperate with the family physicians in the administration of these, or in other treatments.

Lectures.

A series of three health talks, based on the needs of the women as revealed by the defects discovered at the physical examination was given to the first year students of University College and the Faculty of Medicine. The hours for these talks were taken from the gymnasium periods, and credit was granted for attendance at them.

A series of four lectures was given to the students in the Public Health Nursing Course.

In the course leading to a Diploma in Physical Education, ten lectures in personal hygiene were given to the first year, fifteen lectures and demonstrations in first aid were given to the second year, and twenty five lectures in general hygiene were given to the third year.

Needs.

With the increase in growth in the Faculty of Household Science and the demand for space in their building, it is obvious that the Household Science Building can no longer house the medical office. The corrective gymnasium room will have to be given up this coming year, and unless provision is made elsewhere the very important work of correcting defects while they still can be corrected must stop. Adequate gymnasium facilities to provide for the women of the university, and space necessary to carry out the university requirements in physical training are imperative. It is also necessary to build for the future. The development of the women within the university is being stunted for lack of gymnasium facilities, and it is to be hoped that in the very near future this long-standing need will be recognised and provided for.

Physical Examinations of the women of the University of Toronto for the year 1927-1928,

University College		284
First Year	173	
Other years	111	
Trinity College		49
Victoria College		73
St. Michael's College		48
Faculty of Medicine		25
First Year	12	
Other years	13	
Faculty of Household Science		61
First Year	39	
Other years	22	
Ontario College of Education		104
Department of Public Health Nursing		42
Department of Social Service		2
Department of Occupational Therapy		35
Faculty of Architecture		2
Faculty of Music		1
Faculty of Art		1
Graduate, Occasional and Special		10
Total		737

REPORT ON ATHLETICS AND PHYSICAL TRAINING

(T. A. Reed, Secretary, Athletic Association)

III.

Compulsory Physical Training.

(*a*) There were 1586 male students enrolled in the first and second years. Of these 88 had already completed two years physical training and 90 were exempted on medical grounds or by dispensation. The remaining 1410 elected to take their physical training as follows:

In the C.O.T.C		265
In the following Sports (part time)		
FALL TERM		
Rugby Football	220	
Soccer	60	
Harrier	13	
English Rugby	5	
SPRING TERM		
Basketball	107	
Hockey	67	
Indoor Baseball	63	
Boxing, Wrestling and Fencing	56	
Swimming	49	
Rowing	30	
Indoor Track	20	
Gymnasium	20	
		710
In Physical Training Classes		1020
		1995
Less those in two or more activities		616
		1379
Repeaters		31
		1410

Under the chief instructor, Mr. D. M. Barton, and with the assistance of Mr. W. H. Martin and Mr. J. E. McCutcheon, 22 periods a week were held in general physical training and 20 periods a week for corrective work, these last being conducted with the co-operation of the medical director.

Under the swimming instructor, Mr. W. W. Winterburn, 114 students were taught to swim and 232 were granted the awards of the Royal Life Saving Society for proficiency in first aid to the drowning. Mr. Winterburn conducted 20 classes each week and in addition supervised the practices of the various college and faculty swimming and water polo teams.

Intercollegiate Athletics.

(*b*) University of Toronto teams again made a very creditable showing in the number of championships won during the year, and, what is more gratifying, sustained our reputation for fine sportsmanship.

The Intercollegiate Championships won included: Track, Harrier, Tennis, Golf, Senior Hockey, Intermediate Hockey, Senior Basket-ball, Junior Rugby, Swimming and Diving and Boxing, Wrestling and Fencing.

McGill won the Soccer, English Rugby, Water Polo and Gymnasium championships; Queen's the Senior Rugby championship; R.M.C. the Intermediate Rugby and O.A.C. the Intermediate Basket-ball.

Our Clubs entered teams in the O.R.F.U. Senior Rugby Series, in the Senior, Intermediate and Junior Ontario Hockey Series and in the Junior Ontario Basketball Association.

The Alumni Hockey Team (Varsity Grads) of last year represented Canada at the Olympic Games at St. Moritz and had little difficulty in winning the World's Championship.

In International competition, our lacrosse team again played at Baltimore and Brooklyn, our hockey team at Boston, New York and Yale, our boxing team at the West Point Military Academy and our basket-ball team played several games in the Eastern States.

Interfaculty Athletics.

(*c*) Athletics intra-murally still continues to be a most important adjunct to our physical well-being, and proves emphatically that all our interests are not centred around the stadium for a few weeks in the autumn term. Over fourteen hundred men turned out for competition for the several cups in the different branches of sport which were keenly contested. The record is as follows:—

Series	Cup	Winners	Total number of men engaged
Rugby	Sir William Mulock Cup	Victoria	272 (13 Teams)
Track	W. L. Rowell Memorial Cup	S.P.S.	65
Soccer	Arts Faculty Cup	Victoria	143 (11 Teams)
Harrier	J. Brotherton Cup	O.A.C.	95
Hockey	W. T. Jennings Cup	Victoria	204 (17 Teams)
Basket-ball	Hon. Clifford Sifton Cup	Jr. U.C.	240 (20 Teams)
Boxing, Wrestling and Fencing	Francis Davidson Cup	O.A.C.	62
Indoor Baseball	A. G. Spalding Cup	Jr. S.P.S.	132 (12 Teams)
Swimming	A. M. Fitzgerald Cup	U.C.	38
Water Polo	H. P. Eckardt Cup	Sr. U.C.	96 (8 Teams)
Indoor Track	Toronto Cricket Club Cup	U.C.	40
Rowing		S.P.S.	48 (6 Crews)
Tennis	F. Y. McEachren Cup (University Champion)	G. Nunns U.C. IV	97
Swimming	B. Durnan Cup (University Champion)	A. L. Boddy U.C. II	14
Gymnasium	H. A. Wilson Cup	S.P.S.	40

The Athletic Directorate for 1927-28 consisted of Professor M. A. Mackenzie, President; Professor C. H. C. Wright, faculty members; Dr. J. A. McCollum and Dr. W. Easson Brown representing the Athletic Advisory Board; and the following, elected by the undergraduates: Mr. A. T. Christie, Mr. D. D. Carrick, Mr. W. M. Master, Mr. J. R. McGillivray and Mr. G. F. Trimble. Mr. J. W. Robson represented the Students' Administrative Council.

DEPARTMENT OF PHYSICAL EDUCATION FOR WOMEN

(*Miss I. V. Coventry*)

IV.

During the session 1927-1928 there were 458 women students enrolled in the physical training classes.

First year students in compulsory physical training	280
Students, all years, in corrective and remedial classes	20
First year in diploma class in physical training	23
Second " " " " " " "	9
Third " " " " " " "	6
Fourth " " " " " " "	9
Students, all years, in fencing class	58
Students from University College	214
" " Victoria "	27
" " Trinity "	16
" " St. Michael's "	14
" " Faculty of Medicine	13
" " Faculty of Household Science	51
" " Faculty of Applied Science	2
" " Public Health Nursing	2
" " Occupational Therapy	39
Approximate number of class periods of instruction in the gymnasium during the session	816

Athletic Teams:—	
University College Basket-ball Team	24
Victoria " " "	24
St. Michael's " " "	16
Faculty of Medicine...." "	16
Swimming:—	
Total number of students, all colleges, faculties, and departments, using the swimming pool during eight months	314
Students from University College	139
" " Victoria "	56
" " Trinity "	15
" " St. Michael's "	23
" " Faculty of Medicine	14
" " Faculty of Household Science	19
" " Occupational Therapy	25
" " Public Health Nursing	9
" " Social Service	1
" " Music	1
Administrative Staff	12

The physical training classes were composed of first year women students from University College, the Faculty of Medicine, the Faculty of Household Science, the Faculty of Applied Science, and also voluntary students from University College, Victoria College, St. Michael's College and the Department of Public Health Nursing.

To fulfil the regulation of two class-periods a week in the gymnasium for the first year compulsory physical training it was necessary to plan fourteen (14) class-periods a week to accommodate all the students, as many could not attend the regular class-periods assigned for the compulsory class.

Additional class-periods of instruction in corrective and remedial exercises were arranged to suit the students who were medically advised to take the prescribed work. These classes were composed of six to eight students who attended two periods a week under careful supervision. The beneficial results were most gratifying.

The only available space where this essential part of the work could be carried on was in an extremely small and poorly ventilated room, the gymnasium being reserved for larger classes which were conducted at the same time.

To meet the many appeals of the university athletic teams and clubs for organised games in the gymnasium, it was necessary to assign practice periods at times most inconvenient to the various teams.

The gymnasium was used for basket-ball teams at eight o'clock in the morning and five to six in the afternoon during five days of the week, and frequently from one to two o'clock at noon.

DIPLOMA COURSE IN PHYSICAL EDUCATION

Due to the lack of room accommodation for the practical and theoretical work it was difficult to arrange satisfactory class-periods to suit the forty-seven (47) students who were enrolled in the physical education course.

Notwithstanding the numerous handicaps, the students of the fourth year have carried on arduously through the many conflicts to a successful termination. It is gratifying to state that eight students of the fourth year have successfully attained the requirements of the physical education course.

An interesting feature in connection with this course is the fact that the women graduates who were granted a diploma in physical education are now filling splendid positions as full time physical directors in collegiates and high schools in Toronto and other cities in Ontario.

Occupational Therapy

There were four additional classes a week for the thirty-nine students enrolled in the two years' course in Occupational Therapy.

They took the prescribed course in physical education as outlined in the syllabus arranged by the University Extension Department.

Report of the Ontario College of Education Physical Training During the Past Eight Months' Session 1927-1928

Number of women students in attendance at gymnasium classes	96
" " " " swimming "	100
Number of class-periods of instruction in the gymnasium throughout the year	240

Additional theory lectures were given in connection with the course.

During the fall term the class was divided into two sections, each was given forty-five minutes of instruction in practical gymnastics four days a week. Additional instruction in team games was given during the month of May.

The swimming instructor reports a creditable attendance and good results attained by the students attending the swimming classes.

(18) REPORT OF THE WARDEN OF HART HOUSE

(*J. B. Bickersteth, Esq., M.C., M.A.*)

Centenary.

Hart House took an active part in the celebration of the Centenary of the University from 5th to 9th October. Throughout this period the building was illuminated each night by flood lights and its architectural features were displayed to great effect. The student delegates were entertained at lunch on 5th October. On each day of the celebrations lunch was served in the Great Hall for the official delegates. Hart House was open for inspection throughout the Centenary period, ladies being admitted. On 8th October three hundred graduates were given lunch in the Great Hall before the rugby game. On Wednesday evening 5th October the undergraduate centenary ball was held in Hart House and proved a great success. It was a warm night and the singing of college songs took place in the quadrangle which was specially lighted. The whole House, which was beautifully decorated, was used for this function, some eighteen hundred persons being present. On the evening of Friday, 7th October, the graduate centenary ball took place in Hart House and was attended by three thousand and fifty guests. This is the largest number of persons who have ever attended a single function in Hart House. Unfortunately the weather was cold and rainy and it was impossible to use the quadrangle. This was all the more serious because of the large crowd. Most of the official delegates to the Centenary attended this ball.

Sketch Room.

During the Centenary an exhibition of pictures by Ontario artists was held in the Sketch Room. Other exhibitions include pictures by Mr. A. Y. Jackson, Mr. Arthur Lismer, English water-colour artists, the British Columbia Society of Fine Arts, members of Hart House, Mr. W. P. Lawson and Mr. W. J. Phillips of Winnipeg. During the summer a new system of lighting was installed which makes this room one of the best lighted galleries in Canada. The accommodation of the little Sketch Room was also greatly improved and reproductions of the pictures of the Old Masters were exhibited there. The Camera Committee also arranged an exhibition of photography by members of Hart House. In September last Professor G. M. Wrong set aside the sum of two thousand five hundred dollars as the Harold Verschoyle Wrong Memorial Fund in memory of his second son who was killed on the Somme in 1916, the interest from this sum (*i.e.* one hundred and twenty-five dollars) to be paid to Hart House on 1st January each

year and to be devoted to the purchase of works of art for Hart House. This valuable benefaction is the first of its kind ever received by Hart House. Professor Fairley presented to the Sketch Room a most interesting gift of reproductions of Hodler's pictures and Mr. Arthur Lismer presented his sketch of Napoléon Leblond, the French-Canadian furniture-maker. In this connection it should be reported that one of the guest bedrooms in Hart House has been furnished entirely in the French-Canadian style, the curtains, furniture and rugs having been specially made by Mme. Cimon Napoléon Leblond and other habitants of Baie St. Paul. A special fund put at the disposal of the Warden made it possible to purchase all the Albertina reproductions from Vienna and these with others already possessed are the beginning of what will become a valuable collection of prints. The prints, books, frames, tools and other equipment in the Sketch Room having assumed large proportions, an undergraduate was appointed Keeper of the Prints in February and is responsible for the general supervision of this room.

Music.

The series of eight Sunday Evening Concerts was again held in the Great Hall with great success. The attendance at the Friday Afternoon Recitals was larger than ever before and the performances reached a very high standard. Eight Songsters took place in the Music Room and under the able direction of Mr. J. Campbell McInnes attracted men from every college and faculty who were anxious to learn about folk music. In March, Mr. F. R. MacKelcan, the graduate member of the Music Committee, gave two lectures on opera illustrated by a gramophone. As in previous years the Music Committee assisted in the management of the performance during Holy Week of Bach's St. Matthew's Passion, the upper galleries of Convocation Hall being filled with students. The success of these and other musical functions encourages the belief that perhaps the time has come to make a definite effort to develop the appreciation and performance of good music throughout the University.

Debates.

A further series of successful debates was held during the winter. The outstanding debate was that at which the Prime Minister of Ontario was present as a visitor and supported the resolution "That it would not be in the best interests of Canada to assume the right to amend her own constitution". The undergraduates felt that Mr. Ferguson's presence on such an occasion was an official recognition of the value of these debates in the life of the University. The Debates Committee suffered an irreparable loss through the untimely death of Mr. Maurice Cody. Mr. Cody had taken the keenest interest in the establishment of debating in Hart House on the parliamentary system. He served on the committee from its earliest days and on many occasions (and always with distinction) he took part in the debates. Perhaps his most outstanding speech was the one he delivered when leading the Opposition against the Prime Minister of Canada in February 1927. Professor V. W. Bladen has resigned after sitting for four years on the Debates Committee and acting for two years as its Chairman and also as Speaker of the House. Hart House debates owe much to the time and energy he has devoted to the affairs of the committee and to his impartiality and wisdom as Speaker of the House.

Student Christian Association.

The Student Christian Association has shown steady development during the past year under the guidance of the Rev. F. J. Moore. A series of public lectures took place in the Music Room and drew large attendances.

Celebrations of the Holy Communion and midday services were held in the chapel. Many discussion groups met in Hart House throughout the winter. But most important of all is the personal work done by Mr. Moore who is becoming in the fullest sense the Chaplain of Hart House.

Visitors.

On 29th August, H.R.H. the Prince of Wales and H.R.H. Prince George visited Hart House privately. They played squash and had tea in the Warden's rooms, spending about three hours in the House. This is the third time the Prince of Wales has visited Hart House during the last few years. In February, the Governor-General and Lady Willingdon visited Hart House informally and met the members of the Board of Stewards. Earlier in the year four delegates from the Sorbonne visited Hart House and made minute enquiries into its life and management. Senator Honnorat, who was head of the party, stated that it was desired to erect a building somewhat similar to Hart House at the Cité Universitaire in Paris. The usual enquiries about Hart House have come from many universities in the United States and other parts of the world. Other visitors have been Bruce Bairnsfather, Lord Hewart (Lord Chief Justice of England), The Hon. F. W. Beyers (Minister of Mines, South Africa), Sir Richard Redmayne, Mrs. Wintringham (M.P. House of Commons, London), The Marquis of Dufferin & Ava, Bishop W. C. White (Honan), The Hon. William Phillips (United States Minister, Ottawa), Dr. Livingston Farrand (President of Cornell University), The Hon. T. A. Smiddy, Sir John Bland-Sutton, Dr. R. W. Livingstone (Vice-Chancellor of Queen's University, Belfast), Mr. Alfred Noyes, Mr. J. G. Gardner (Prime Minister of Saskatchewan), Sir Gordon Guggisberg (Governor of the Gold Coast, West Africa), The Rev. J. Taylor Smith, Mr. Isaac F. Marcosson, Dr. A. J. Davison (Conductor of the Harvard Glee Club), Mr. W. R. Southorn (Colonial Secretary, Hong Kong), Dr. Marius Barbeau, Mr. J. Brandon Thomas, The Rt. Hon. L. S. Amery, Mr. George W. Russell ("AE"), Col. David Carnegie, Mr. Kennedy Cox, Mr. John Walter ("The Times"), Professor Tout, Professor Dibelius, Professor Kramers, Count de Grunne (Louvain).

Conventions.

During last summer the Great Hall was used by the delegates of four large conventions, namely, the Canadian Medical Association, the American Library Association, the World Federation of Education Associations and the Empire Mining and Metallurgical Congress. The total number of meals served during the American Library Association convention was 12,743 with an average number of 2,124 meals each day, the average number of persons served at each meal on 21st June being 932. The total number of meals served during the World Federation of Education Associations convention was 9,576 with an average of 1,064 meals each day.

The Great Hall and Social Functions.

The number of student meals served in the Great Hall during the academic year 1927-1928 was even greater than that of the previous year. The list of special dinners and other functions is too long to quote. The increase of business made necessary the appointment of an assistant to the Superintendent of the Great Hall. The annual fancy dress ball, the graduates' ball and the usual faculty and college dances were held. The men and boys of the University Settlement were entertained at Christmas. The daily use of every part of the House in full term time is remarkable. The accommodation is taxed to its limit.

Fees.

During the last few years the activities of Hart House have expanded to such an extent that the Board of Stewards has found increasing difficulties in meeting the financial demands which naturally resulted from this development. To meet the situation the annual undergraduate fee will be raised with the concurrence of the Board of Governors from eight dollars to ten dollars in September, 1928. The Board of Stewards considered that the annual membership fee for graduate and faculty members should not be increased, but that those graduate and faculty

members who were making use of the athletic privileges should make a greater contribution to the finances of the House proportionate to the costs entailed by such use. The locker fee will therefore be raised as from 1st October, 1928. There are now five hundred and thirty-eight resident graduate members, one hundred and fifteen non-resident graduate members and two hundred and fifty-eight faculty members, making a total of nine hundred and eleven senior members of Hart House. The increasing demand for membership by graduates of the University of Toronto would seem to indicate that the time will shortly come when it may be necessary because of restricted accommodation to limit the senior membership of Hart House.

Staff.

Last year I had to report the absence of the Comptroller of Hart House, Mr. J. R. Gilley, and the Secretary of Hart House, Mr. J. Hornal, through illness. They were away for many months but both were able to return to work last September and received the warmest of welcomes from all members of Hart House. Mr. Hornal resigns his position as Secretary of Hart House at the end of June. In the three and a half years during which he has filled this post he has made it one of considerable influence throughout the House. In the course of his duties he is called upon not only to supervise the innumerable details of the Warden's office but is also brought into personal contact with hundreds of undergraduates and senior members. Under his direction the graduate and faculty membership has increased from about four hundred and fifty to its present size, over nine hundred persons. In the resignation of Mr. Hornal all members of Hart House lose a man who has devoted himself unsparingly to their welfare. Mr. F. A. Wansbrough (Victoria '28) has been appointed to succeed Mr. Hornal. Mr. Wansbrough is no stranger to Hart House as he has served for the past three years on the Hall Committee and for the past two years on the Board of Stewards. Last summer he was temporarily on the staff of Hart House and did excellent work in connection with the conventions.

Committees.

Professor C. N. Cochrane resigns this year from the Board of Stewards on which he has served for five years as one of the President's representatives. The service which Professor Cochrane has rendered to Hart House in this capacity has been invaluable, and the Board has learned to rely on his sound judgment and sincere devotion to the best interests of Hart House. It should be recorded that during the past year two undergraduate members of the Board of Stewards and three undergraduate members of the standing committees have won important scholarships at Oxford and Cambridge. This in itself would seem to be a proof that outstanding men are being elected to the committees of the House. Indeed it would be impossible to end this report without an expression of my deep obligation to these committees and to all members of Hart House.

(19) REPORT OF THE DIRECTOR OF THE CONNAUGHT LABORATORIES

(Dr. J. G. FitzGerald)

This is the fourteenth annual report of the director of the Connaught Laboratories. The occupation of new quarters in the Hygiene building has greatly improved the conditions under which the work of the laboratories has been conducted. For the first time many undertakings of both a research and routine character, which heretofore it has not been feasible to launch, have been initiated. Because of the rapid advances made in the particular portions of the fields of bacteriology, immunology, pathology, physiology, biochemistry, epi-

demiology and statistics, which engage the interests of the staff of these laboratories, the choice of problems and the availability of suitably trained workers emerge as primary obstacles to be overcome.

In a department where public service, as well as research and teaching, is carried on and where little in the way of precedent is established the wrong turning may occasionally be followed or unsuitable projects initiated. However, these preliminary explorations or forays seem essential and certainly provide intellectual enjoyment for those engaged in them.

Canada is a land of rapid growth. Any institution attempting to provide for some of the needs of her citizens will also grow or cease to fulfil satisfactorily its function in the community. Hence it is believed that the Connaught Laboratories must increase in personnel, extend and improve the services rendered and be alert always to embrace every opportunity for the promotion of research in preventive medicine and to provide those biological products which in such an extraordinary fashion contribute to the reduction in number of preventable deaths and to lessen the volume of controllable sickness.

Staff—The staff of the laboratories now (June 30th, 1928) consists of 122 persons. The total in 1927 was 98; in 1926 the number was only 74. The administration consists of the director, associate director, four (to be five in 1928-29) assistant directors, comptroller and secretary. On the research staff there are research members, associates, assistants, fellows and technicians. The routine work is carried on in the administrative and productive fields by a group of more than seventy persons, including those employed on the University Farm section of the laboratories. Fifteen members of the staff devote a portion of their time to teaching, in addition carry on research and have supervision of certain routine work. In general, the research staff is on duty for at least ten months and many with important administrative duties for eleven months or more during each year. On this account and because of the urgent necessity for constant communication and contact with similar institutions in other parts of the world, leave of absence is frequently necessary for the research-administrative members of the staff. Dr. D. T. Fraser and Dr. C. H. Best, assistant directors, are at present abroad (in France and England respectively) for study and observation for the period March 15th to October 1st, 1928. In addition, Dr. Edith Taylor will spend two months in England and Miss Jessie Ridout, M.A., one month in the Rockefeller Institute for Medical Research on study leave. The director and associate director, as guests of the Rockefeller Foundation, each spent a brief period visiting centres of public health interest in the United States during the present year. The courtesy of the Rockefeller Foundation in this connection was deeply appreciated. Mr. M. D. Orr, B.A., for the past five years chemist in the Insulin Committee testing laboratory, has been appointed assistant director. Mr. Orr will, it is anticipated, become a resident assistant director at the University Farm. Dr. Frieda Fraser and Dr. P. A. T. Sneath have accepted appointments as research associates and Dr. M. R. Brown as clinical associate. Dr. E. C. Robertson, Dr. D. L. McLean and Dr. D. J. Bowie have resigned and their departure is greatly regretted. Additional appointments have been made to the staff of the antitoxin and insulin divisions and the resignations of several workers in these divisions have been accepted.

Research—A very considerable amount of research has been carried on this year. For the scientific publications of members of the staff see Appendix 11.

Public Services—Again an increase in the volume of work of the antitoxin and insulin divisions is noted. The products distributed are as follows: anti-anthrax serum, anti-meningococcic serum, anti-rabic vaccine, Dick test outfits, diphtheria antitoxin, diphtheria toxoid, insulin, liver extract, normal horse

serum, paratyphoid vaccine, pertussis vaccine, pneumococcus (type I) serum, scarlet fever antitoxin, scarlet fever toxin, Schick test outfits, tetanus antitoxin, typhoid vaccine, vaccine virus.

The most important new product added during the year is liver extract which has been proven to be a therapeutic agent of great value in the treatment of pernicious anaemia.

The countries in which one or more of the above products has been distributed are: British West Indies (Barbados, Bermuda, St. Lucia, Trinidad). Dominion of Canada (all provinces), Ceylon, China, Czechoslovakia, Finland, India, Irish Free State, Japan, Newfoundland, New Zealand, Palestine, Portugal, Roumania, South Africa, Uruguay, Venezuela.

Experience during the past two years has shown that the laboratory and stables at the University Farm are inadequate both for present and probable future requirements. Steps are to be taken therefore to provide for these needs. This project is at present being developed and will be reported upon subsequently.

As in previous years, a very large number of visitors from many parts of Canada and from other countries has come to the laboratories. A list of some of these countries includes Australia, Austria, Brazil, Colombia, Bulgaria, France, Hungary, India, Japan, Paraguay, Roumania, Spain and Yugo-Slavia.

The very generous support and sympathetic co-operation of the chairman and members of the Connaught Laboratories' Committee of the Governors, and of my colleagues in the laboratories are deeply appreciated and hereby gratefully acknowledged.

(20) BIOLOGICAL MUSEUM AND ROYAL ONTARIO MUSEUM OF ZOOLOGY

(Professor B. A. Bensley)

The growth of the museum collections has been quite equal to that of previous years.

Important donations were as follows: mounted heads of the rare white rhinoceros and of the more common black rhinoceros of Africa from Mr. H. S. Osler; a collection of 51 paintings of birds of Eastern Canada, the work of Major Allan Brooks, D.S.O., Okanagan Landing, B.C., the gift of Wallace Havelock Robb; four specimens of the extinct passenger pigeon, a considerable collection of insects, a pair of ring-necked pheasants, spruce partridge, whip snake from Brazil, weasel, 2 eggs of Cooper's hawk and 2 books from Mr. Paul Hahn; a collection of lemmings, skulls of arctic fox and arctic hare and specimens of snowy owls and purple sandpiper collected in Baffin Island and donated by C. H. Jenkins; a large collection of mounted birds and bird skins, the property of the late John Maughan, from Miss M. and Mr. Walter Maughan; a lake sturgeon 6′ 10″ long weighing 135 pounds from John F. Miner; a collection of heads and horns from the Imperial Institute, London; two ornithological journals covering personal observations 1886-1897 and 298 pamphlets and other natural history publications from H. H. Brown; 3 whistling swans, Swainson's hawk, 16 numbers of the National Geographic from J. H. Fleming; ten birds, three nests and several coloured reproductions of birds and mammals from Dr. Paul Harrington; a black-throated loon from Baffin Island from the National Museum of Canada; a small collection of birds' eggs from Dr. N. A. Powell; eleven books, minute book of the Natural History Society of Toronto and several photographs of early naturalists from E. V. Rippon; two record books of the Great Lakes Ornithological Club from W. E. Saunders; snowy owl, great horned owl, great gray owl and horned grebe from Dr. F. N. G. Starr; a small collection of birds' eggs including an egg of the sandhill crane from G. A. Thompson; a fox and white-

crowned sparrow from Stuart L. Thompson; twenty-seven numbers of "Rod and Gun", two books and two pamphlets from John Townson.

Through the co-operation of the Canadian Pacific Railway Co., the museum obtained specimens and colour sketches of the red trout (Salvelinus marstoni) and of the ouananiche (Salmo salar ouananiche) from which coloured casts have been prepared. Many specimens were received from the Parks Department, City of Toronto, some of the more important of which were two cassowaries, two Humboldt's penguins, barasingha deer, Egyptian goose, crested screamer, crowned crane, Japanese mynah, African porcupine and two young peccaries.

Donations were also received from C. L. W. Bailey, H. Bailey, C. M. Baldwin, L. H. Baldwin, Mrs. Bambridge, N. K. Bigelow, R. Brett, W. A. Brodie, Fred Brown, A. M. Bryden, A. Buchanan, F. C. Clarson, Dr. W. A. Clemens, Dr. W. J. Corrigan, Dr. A. Cosens, Dr. E. H. Craigie, J. Cramp, R. Devitt, Prof. H. R. Dill, Doubleday, Doran and Gundy Ltd., C. E. Edmonds, John Edmonds, F. H. Emery, W. H. Gooderham, R. Goss, A. D. Harkness, J. L. Hart, Mrs. J. A. Harvey, C. F. Haultain, R. Hedley, C. Hope, MacLean Howard, Dr. W. E. Hurlburt, C. Ironside, S. J. Jarvis, N. P. Kelly, Mrs. A. M. Kirkpatrick, Miss Lamountaine, Geo. Landymore, G. E. Lindblad, R. V. Lindsay, H. F. Lewis, R. Lunn, W. G. McKeand, Mrs. Geo. Mitchell, Jas. Mossop, W. G. Neff, Geo. Pearce, L. B. Potter, W. E. Ricker, R. Sadler, J. P. Scott, Allan Secord, A. Slater, Dr. C. E. Stacey, Dr. D. A. Stewart, H. W. Swaine, B. W. Switzer, Allan Twining, W. Tyson, Dr. E. M. Walker.

The following specimens were purchased: a collection of British Columbia mammals from K. Racey of Vancouver; four mounted game birds of Esthonia from Geo. van der Bellen; some Atlantic coast birds from Allan Moses, Grand Manan, N.B.; a series of wolf and other mammal skulls from trappers in various parts of Canada; small series of bird skins for study collection from J. D. Smith, Boston, Mass., R. W. Tufts, Wolfville, N.S., C. G. Harrold, Winnipeg, and some mammal skins from A. A. Wood, Coldstream, Ont.

As a result of expeditions sent out by the museum and the department during the summer 530 specimens of birds and mammals were collected and twenty-three moulds and colour sketches for making coloured casts for museum exhibition were added to the collection.

The study collection of fishes now contains 2430 lots and individual specimens including representatives of 66 families, 167 genera and 237 species.

Additions to the pamphlet collection numbered 774.

(21) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF GEOLOGY

(Professor E. S. Moore)

During the past year several exhibits, for which room in cases was not formerly available, have been placed on exhibition. A considerable number of new specimens, including one mine model, have been added to the collections. Donations have been received as follows;

Gold ore from Porcupine, silver ore from Cobalt and mica from the Arctic Islands, from Dr. F. G. Banting; Lead-zinc ore and anthraxolite from the Sudbury district, Ontario, from Mr. J. Dawson; Gold, copper and lead-zinc ores from Ontario and alunite from Utah, from Mr. W. A. Brodie, Toronto; Samples of petroleum and its by-products, from the Imperial Oil Company; Concretions from Bellevue, Ontario, from Mr. J. E. Mackey, Sault Ste. Marie, Ontario; Tungsten ores from South Dakota and bentonite, iron carbonate and concretions from Upton, Wyoming, from Mr. R. G. Wayland, Homestake Mining Company, Lead, S.D.; Sphalerite from Bruce Peninsula, Ontario, from Dr. T. L. Gledhill, Toronto.

Boulder of iron ore from Mattagami River, Ontario, from Mr. R. J. Watson; Silver ore from the Coniagas Mine, Cobalt, Ontario, from Mr. F. D. Reid; and a model of the Flin Flon ore bodies, Manitoba, from Mr. J. P. Watson, President, Mining Corporation of Canada.

A collection of precious stones, ores and other economic minerals has been obtained by purchase and specimens of vein structures and ores have been collected from some of the mining camps of Ontario by the director of the Museum.

(22) STATEMENT REGARDING THE ROYAL ONTARIO MUSEUM OF PALAEONTOLOGY

(Professor W. A. Parks)

The University expedition of 1927 obtained a rather unsatisfactory collection of fossil mammals from the Cypress hills and a better series of dinosaurs from the Red Deer river. During the year a very fine head of *Chasmosaurus belli* has been mounted and the preparation of an entire skeleton of this species has almost been completed. The appointment of Dr. Fritz as Museum Assistant has made possible the re-arrangement of the Canadian series and the making of new labels. A special case has been prepared to illustrate the different methods of fossilisation, and the duplicate material in the basement is being re-arranged and classified to facilitate the making of exchanges.

The collection of generic sets of invertebrates has been extended by the purchase of examples of the rarer *Brachiopoda*. The appropriation for purchase is being reserved, in part, for the use of the director during the summer.

The necessity for more space is becoming urgent; unless some relief is afforded, it will be very difficult to find room for the display of large fossils now being prepared.

The more important acquisitions during the year are as follows:

By donation;

Neuropteris, Illinois—Dr. A. P. Coleman.
Pecopteris, Illinois. ,, ,,
Collection of fossils from N. Ontario—Dr. W. S. Dyer, Toronto.
Lignite, Metagami, Ont.—Dr. W. S. Dyer, Toronto.
Phoca greenlandica—Mr. D. H. D. MacMillan, Finch, Ont.
Collection of fossils from the Mesozoic of Germany and a few miscellaneous specimens from Dundas, Humber river, etc.—Professor Ellis Thomson, Toronto.
Pygope dipthya—Professor Ellis Thomson, Toronto.
Ammonites from England—Mrs. E. E. Spencer, Toronto.
Geological maps of Norway—Professor Jakob Schetelig, Oslo, Norway.

By exchange;

Elotherium ingens—University of Chicago.
Collection of Bryozoa from Workman's brook sent to Mr. Hibbard, Buffalo, N.Y., in exchange for collection of Bryozoa from Minnesota, Indiana, Ohio, and New York.

By collection;

Collingwood and Gloucester fossils from Ontario—The director and staff.
Mammalia from Saskatchewan—University expedition.
Dinosaurs from Alberta—University expedition.

By purchase:

Collections of selected brachiopod genera—Ward's Natural Science Establishment, Rochester, N.Y.

Ordovician sponges—Mr. Percy Train, Rochester, Nevada.

Specimens of Receptaculites—Mr. W. W. Robinette, Dona, Va.

(23) STATEMENT REGARDING ROYAL ONTARIO MUSEUM OF MINERALOGY

(*Professor T. L. Walker*)

The Royal Ontario Museum of Mineralogy, which is under the direction of Professor T. L. Walker, contains extensive collections of minerals and rocks. The systematic collection of minerals is unusually complete and serves not only as a means of familiarising students with the appearance and association of most of the known minerals but also as a store of comparative material for research connected with Canadian mineral deposits. To make the collections more useful to visitors the large specimens in the high cases are provided with special explanatory labels. In the cases on the east wall of the gallery a special display of the minerals of Canada is arranged.

The most generous benefactors of this section are men connected with the mining industry. During the past year the collections have been increased by donations from a large number of friends, exchange, purchase and collection by the museum staff.

Notable presentations have been made by the Mining Corporation of Canada, the Keeley Silver Mines, Limited, the Castle Trethewey Mines, Limited, the Nipissing Mining Company, Limited, and the Consolidated Mining and Smelting Company of Canada.

Important exchanges have been made with Harvard University, the Museum of the City of Leicester, the United States National Museum, and the Geological Survey of the Union of South Africa.

(24) STATEMENT REGARDING THE MUSEUM OF ARCHAEOLOGY

(*Professor C. T. Currelly*)

The past year has again seen marked growth in the museum collections.

In the department of European prehistory, a number of British stone and bronze implements have been secured, mainly dredged from the Thames. In this department there has been extensive re-arrangement, and great strides have been made towards completing the catalogue of the collection. A great deal of labelling has also been done.

In the Egyptian and Babylonian collections, little has been added; but Dr. Samuel A. B. Mercer has been engaged on the reading and cataloguing of the Babylonian tablets, and numbers of them have been put on display and labelled.

The chief acquisitions in the classical collection have been three good stone heads, a 6th century Attic plate, a bronze double-axe, the bronze end of a chariot pole, a few seals, and fifty-three coins. Much work has been done by Professor Iliffe in the cataloguing and arrangement of the collection.

Interesting additions have been made to our coins of ancient Britain. We have received a hoard of early Gaulish tin coins, two gold pieces that are important links in the development of the early British coinage from the stater of Philip into the curiously degraded type used in Britain about 200 B.C., and over a hundred other early Gaulish and British coins.

The Roman-British collection has been steadily augmented, mainly from

recent finds in London and the south of England. Two fine pieces of mosaic pavement are exhibited and many small articles of general domestic use, including an important collection of sandals found in London during excavations for some large buildings. In layers above the Roman sandals were found excellently preserved shoes of the 15th and 16th centuries, which we have also received. These show that the Roman heavy sole gave place to a more moccasin-like sole. Possibly the appearance of good roads made the heavy sole less a necessity.

A few important Anglo-Saxon objects have been obtained and exhibited, notably five spearheads, a vase, and several good buckles.

In the department of arms and armour, the outstanding addition is a small collection of exquisitely sculptured and engraved gun-locks. Extensive work has been done in preparing the catalogue.

To our remarkable Chinese collection we have added over a hundred pieces of pottery, porcelain, bronze, etc. The chief acquisition, however, is thirty-six early religious and ceremonial jades. These are of great antiquity and of enormous interest and value to the collection, as perhaps more than anything else they illustrate the philosophical mind that at a very early period dominated China.

To the textiles have been added a beautiful piece of 16th century Spanish lace, and an elaborately woven and appliquéd Bokhara tent.

In the department of printing and the book, through the kindness of the British Museum we have obtained an engraving, also illustrative of printing, dated 947 A.D.; this is from the famous collection of early manuscripts discovered by Sir Aurel Stein. One hundred and ten examples of German printing prior to the year 1500 have also been added. Under this department, a new collection is being established. Through Mr. Paul Hahn, the Toronto Stamp Collectors' Club has undertaken the formation and handling of a collection of Canadian postage stamps, which promises to be of great interest to the very large number of stamp collectors throughout the country.

Satisfactory progress has been made in the department of ceramics by our acquisition of some important Italian renaissance majolicas and a quantity of early English earthenwares and later porcelains; in the series of objects illustrating mediaeval and renaissance private life in Europe; and in the department of metal-work with additions to the collection of Sheffield plate and of ornamental brass and steel.

The furniture and woodwork department has received a fine 15th century English doorway, a beautiful Spanish chest, a large Italian gilt mirror, some important English chairs and cupboards, a sedan chair, and some eminently useful examples of early woodcarving.

Among the valuable additions to the ethnographical collection are a collection from primitive Indian people of musical instruments and other objects of early culture, also prehistoric axes from India. The most dramatic acquisition has been a collection of material from the Coppermine River showing the use by the Eskimo of the native copper. A fine totem pole has also been obtained. The steady stream of Indian objects from our own province continues.

To give a complete list of gifts and donors would run far beyond the space possible for this report.

About sixty exhibition cases have been added during the year to the already congested floor space.

An interesting innovation is the appointment by the Board of Education of the City of Toronto of a teacher in the museum. Miss Lillian Payne was appointed to this post in January, and has instructed four classes a day of senior public school pupils. This, somewhat in the nature of an experiment, has been an unqualified success.

The teaching and every other activity have been terribly impeded by the congestion of the museum, which the writer of the Carnegie report on American museums names as the most crowded museum within his experience.

APPENDIX B

(1) Enrolment in Colleges.
(2) Enrolment in University subjects.
(3) Registration in Courses in the Faculty of Arts.
(4) Registration for Graduate Courses.

(1) ENROLMENT IN THE COLLEGES

The students in University College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	Scientific German	French	Scientific French	Hebrew	Ancient Or. Hist.	R.K.	Ethics
First Year—												
Pass	15	231	67	222	25	55	191	2	29		110	
Honours	7	43	43	65	29		70					5
Commerce & Finance				53			37					
Second Year—												
Pass	8	61	10	185	12	29	146	1	15	8	56	62
Honours	10	30	10	46	17		36			2		5
Commerce & Finance				23			29					
Third Year—												
Pass	4	13	8	117	12		83		1	5	65	54
Honours	6	10	26	24	17		23		2	2		10
Commerce & Finance							26					
Fourth Year—												
Pass	5	14	10	84	6		80		3	6	41	34
Honours	5	8	31	31	5		19		1	2		6
Commerce & Finance							17					
Totals—												
Pass	32	319	95	608	55	84	500	3	48	19	272	150
Honours	28	91	110	166	68		148		3	6		26
Commerce & Finance				76			109					

NOTES—

1. In addition, students of other Faculties and the Teachers' Course were receiving instruction from the following departments:

   English 126; German 145; French 349; Ethics 68.

2. In addition, 46 University College students were taking Religious Knowledge in other Colleges.

The students in Victoria College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Orientals	Rel. Know.	Ethics
First Year—									
Pass	5	68	22	94	56	67	16	80	..
Honours	6	35	39	50	11	54	..	..	7
Commerce & Finance	..	..	..	..	..	13	..	..	..
Second Year—									
Pass	4	37	4	139	8	111	9	124	32
Honours	5	25	8	38	15	33	2	..	13
Commerce & Finance	..	..	..	..	..	5	..	..	..
Third Year—									
Pass	1	9	1	67	3	43	3	82	36
Honours	7	8	8	15	3	13	..	..	6
Commerce & Finance	..	..	..	..	..	7	..	..	..
Fourth Year—									
Pass	1	15	4	62	2	37	3	55	12
Honours	4	3	4	23	7	11	1	..	10
Commerce & Finance	..	..	..	..	..	3	..	..	..
Totals—									
Pass	11	129	31	362	59	258	31	341	60
Honours	22	71	59	126	36	111	3	..	36
Commerce & Finance	..	..	..	..	..	28	..	..	..

The students in Trinity College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Orientals	Ethics	Anc. Or. Hist.
First Year—									
Pass	1	43	..	44	8	40	3	..	..
Honours	4	13	13	14	5	16	..	..	..
Commerce & Finance	..	..	..	..	..	2	..	..	..
Second Year—									
Pass	2	27	3	37	2	44	..	5	..
Honours	2	5	3	7	2	6	..	..	..
Commerce & Finance	..	..	..	..	..	3	..	..	..
Third Year—									
Pass	..	9	..	20	..	18	..	13	..
Honours	..	1	..	4	..	1	2	..	..
Commerce & Finance	..	..	..	..	..	..	..	..	..
Fourth Year—									
Pass	2	5	1	11	..	10	..	5	2
Honours	..	..	..	1	..	4	..	..	..
Commerce & Finance	..	..	..	..	..	..	..	..	..
Totals—									
Pass	5	84	4	112	10	112	3	23	2
Honours	6	18	16	26	7	27	2	..	..
Commerce & Finance	..	..	..	..	..	6	..	..	..

The students in St. Michael's College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Philosophy	Ethics
First Year—								
Pass	11	72	..	72	4	54	..	..
Honours	..	11	9	15	3	15	1	..
Second Year—								
Pass	1	45	..	51	1	44	26	..
Honours	2	7	2	11	1	9	7	7
Third Year—								
Pass	2	19	1	34	..	24	18	9
Honours	2	3	2	6	1	6	5	5
Fourth Year—								
Pass	1	21	..	31	..	23	19	3
Honours	7	7	2	9	..	5	6	..
Totals—								
Pass	15	157	1	188	5	145	63	12
Honours	11	28	15	41	5	35	19	12

(2) ENROLMENT IN UNIVERSITY SUBJECTS

The following tables exhibit the numbers attending lectures in University subjects, together with the number of those taking the practical work in the laboratories:

DEPARTMENT OF MATHEMATICS

	Pass	Pass and Honours	Honours
Faculty of Arts—			
First Year	492	107	49
Second Year	74	92	37
Third Year	48	11	25
Fourth Year	36	7	23
Faculty of Medicine—			
First Year	12	...	...
Second Year	..	...	...
Third Year	2	...	...
Faculty of Applied Science and Engineering—			
First Year	...	193	...
Second Year	...	128	...
Totals	664	538	134

DEPARTMENT OF PHYSICS

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	435	..	138	138
Second Year	23	..	77	96
Third Year	10	..	19	37
Fourth Year	4	..	19	22
Faculty of Medicine—				
First Year	..	122	..	122
Second Year	..	27	..	..
Third Year	..	26	..	16
Fourth Year	..	2	..	..
Faculty of Forestry—				
First Year	26	..	..	26
Faculty of Household Science—				
First Year	..	..	10	10
Faculty of Dentistry—				
First Year	..	25	..	25
College of Optometry—				
First Year	8	..	..	8
Summer Session—				
First Year	..	..	15	15
Refresher Course—First Year	..	..	16	16
Public Health Nursing	12	..	..	12
School of Graduate Studies—				
1. Prescribed Courses	..	..	55	18
2. Professor Kramers' Lectures (External Students)	..	..	11	..
Totals	518	202	360	561

DEPARTMENT OF BIOLOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	435	..	78	78
Second Year	47	..	64	111
Third Year	36	..	3	39
Fourth Year	29	..	18	33
Department of University Extension	10	..	..	10
Faculty of Medicine—				
First Year	..	119	..	119
Second Year	..	55	..	..
Third Year	..	46	..	46
Faculty of Dentistry—				
First Year	..	23	..	23
Faculty of Applied Science and Engineering—				
Fourth Year	..	5	..	5
Faculty of Forestry—				
First Year	..	25	..	25
Fourth Year	..	10	..	10
Faculty of Household Science—				
First Year	..	..	6	6
Second Year	27	..	5	32
School of Graduate Studies	..	..	..	22
Ontario Agricultural College—				
Second and Intermediate Years	..	47	..	47
Third Year	..	20	..	20
Second Year Macdonald Institute	..	63	..	63
College of Optometry		8	..	8
Department of Public Health Nursing		12	..	12
Totals	584	433	174	709

DEPARTMENT OF BOTANY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	435	..	87	87
Second Year	40	..	34	74
Third Year	26	..	3	29
Fourth Year	16	..	4	20
Faculty of Applied Science and Engineering	..	54	..	54
Faculty of Forestry—				
First Year	..	25	..	25
Fourth Year	..	11	..	11
Ontario College of Pharmacy	112	..	..	112
Faculty of Household Science—				
First Year	..	..	9	9
Second Year	29	..	6	35
School of Graduate Studies	..	..	26	26
Teachers' Course	44	..	..	44
Totals	702	90	169	526

DEPARTMENT OF CHEMISTRY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	435	..	140	140
Second Year	46	..	73	119
Third Year	40	..	15	15
Fourth Year	5	..	6	10
Faculty of Medicine—				
First Year	..	120	..	120
Second Year	..	110	..	110
Faculty of Applied Science and Engineering—				
First Year	..	51	..	51
Second Year	..	41	..	41
Third Year	..	55	..	55
Fourth Year	..	4	..	4
Faculty of Dentistry—				
First Year	..	25	..	25
Second Year	..	59	..	59
Third Year	..	60	..	60
Faculty of Forestry—				
First Year	25	..	..	25
Second Year	16	..	..	..
Faculty of Household Science—				
First Year	..	..	10	10
Second Year	23	..	5	28
Third Year	10	..	..	..
Ontario College of Pharmacy—				
First Year	112	..	..	112
Department of University Extension	34	..	..	34
Department of Public Health Nursing	12	..	..	12
School of Graduate Studies	..	..	24	18
Totals	758	525	273	1048

DEPARTMENT OF GEOLOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	435	..	148	..
Second Year	..	..	6	6
Third Year	14	..	4	18
Fourth Year	11	..	3	14
Occasional	1	..	..	1
Faculty of Applied Science and Engineering—				
Second Year	..	34	..	..
Third Year	..	37	..	17
Fourth Year	..	10	..	10
Faculty of Forestry—				
Second Year	..	20	..	6
Third Year	..	9	..	9
School of Graduate Studies	..	..	12	12
Totals	461	110	173	93

DEPARTMENT OF MINERALOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
Second Year	23	..	7	30
Third Year	1	..	15	14
Fourth Year	..	..	3	3
Occasional	1	..	..	1
Faculty of Applied Science and Engineering—				
First Year	..	89	..	89
Second Year	..	32	..	32
Third Year	..	11	..	11
Fourth Year	..	3	..	3
Faculty of Forestry—				
Second Year	..	16	..	16
School of Graduate Studies	..	..	12	12
Totals	25	151	37	211

DEPARTMENT OF PHILOSOPHY

	Pass	Honours
Faculty of Arts—		
First Year	..	10
Second Year	119	20
Third Year	157	18
Fourth Year	79	12
School of Graduate Studies	..	46
Department of Social Service—		
First Year	30	..
Second Year	17	..
Department of University Extension	21	..
Totals	423	106

DEPARTMENT OF PSYCHOLOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
Second Year	84	25	16	..
Third Year	62	12	10	102
Fourth Year	44	14	7	15
Faculty of Medicine—				
Second Year	45	..	..	..
Third Year	146	..	..	34
Fourth Year	8	..	..	..
Dept. of Social Service—				
First Year	28	..	..	..
Second Year	19	..	..	..
Dept. of Public Health Nursing	271	..	..	..
Department of University Extension	74	..	..	..
School of Graduate Studies	..	..	25	15
Occasional Students	36	..	..	..
Totals	817	51	58	166

DEPARTMENT OF POLITICAL ECONOMY

	Pass	Honours
Faculty of Arts—		
First Year	..	122
Second Year	92	180
Third Year	77	84
Fourth Year	73	87
Faculty of Applied Science and Engineering—		
Second Year	149	..
Faculty of Forestry—		
Second Year	11	..
Fourth Year	10	..
Faculty of Household Science—		
Second Year	26	..
Third Year	4	4
School of Graduate Studies	..	20
Department of University Extension	179	..
Department of Social Service—		
First Year	34	..
Second Year	14	..
Occasional Students	4	..
Totals	673	497

DEPARTMENT OF MODERN HISTORY

	Pass	Honours
Faculty of Arts—		
First Year	23	96
Second Year	128	106
Third Year	95	58
Fourth Year	94	72
Department of University Extension	73	..
School of Graduate Studies	..	19
Totals	413	351

DEPARTMENT OF ITALIAN AND SPANISH

	Italian		Spanish	
	Pass	Honours	Pass	Honours
Faculty of Arts—				
First Year	12	10	60	24
Second Year	4	11	34	21
Third Year	5	5	18	12
Fourth Year	3	2	18	12
School of Graduate Studies	..	..	..	7
Totals	24	28	130	76

DEPARTMENT OF HOUSEHOLD SCIENCE

	Pass	Honours
Faculty of Arts—		
First Year	..	33
Second Year	..	29
Third Year	11	30
Fourth Year	11	17
Occasional students	3	..
Faculty of Household Science—		
First Year	39	9
Second Year	27	6
Third Year	25	5
Fourth Year	10	7
Occasional students	2	..
School of Graduate Studies	..	4
Department of Public Health Nursing	43	..
Totals	171	140

(3) REGISTRATION IN COURSES IN THE FACULTY OF ARTS

Courses	First Year				Second Year				Third Year				Fourth Year				
	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	Totals
Pass	231	65	48	70	142	101	45	44	112	66	22	28	106	54	15	24	1,173
Classics	7	6	4	..	7	5	2	2	6	7	..	..	3	3	..	2	54
Greek and Hebrew	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Oriental Languages	..	..	..	..	..	2	..	..	..	..	2	..	..	1	..	..	5
French, Greek and Latin	5	3	..	1	1	2	1	..	1	1	..	2	1	..	..	1	19
Modern Languages	25	17	7	6	20	15	2	5	21	12	1	5	14	11	4	5	170
English and History	28	25	9	9	15	17	2	5	9	11	4	2	19	14	1	4	174
Modern History	2	5	..	..	11	9	5	1	9	6	3	..	7	4	..	..	62
Political Science	10	..	2	..	25	17	5	2	14	10	3	..	17	6	2	1	114
Philosophy	1	..	..	1	3	12	1	6	6	3	2	5	4	1	1	6	52
Philosophy (English or History Option)	1	6	..	..	2	2	..	1	5	3	..	..	1	3	..	..	24
Psychology	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Mathematics	4	4	..	..	2	4	..	..	7	1	..	..	4	2	..	1	29
Mathematics and Physics	16	20	3	1	13	17	..	1	10	3	3	..	11	2	3	..	103
Physics and Chemistry	2	2	..	..	..	..	1	..	1	..	..	..	..	..	..	..	6
Natural and Physical Sciences	26	21	2	..	..	..	..	..	..	..	..	..	..	..	..	..	49
Physics	..	..	..	..	1	1	..	..	..	..	..	..	2	2	..	..	6
Biology	..	..	..	..	..	2	..	..	3	..	..	..	2	1	..	..	8
Physiology and Biochemistry	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	3
Biological and Medical Sciences	..	..	..	..	18	6	3	..	10	12	1	..	12	6	2	1	71
Chemistry	..	..	..	..	4	..	..	..	1	1	..	..	2	..	..	..	8
Chemistry, Mineralogy and Geology	..	..	..	..	..	1	..	..	8	1	1	..	4	1	..	..	16
Geology and Mineralogy	..	..	..	..	..	1	..	..	1	2	..	..	..	..	..	..	4
Physics and Geology	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Science (General)	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	2
Household Economics	13	13	2	1	21	6	2	..	12	13	3	2	7	9	1	..	105
Commerce and Finance (B.Comm.)	67	28	8	4	53	8	5	1	31	9	1	1	22	4	..	2	244
Registered twice	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	3
Totals	438	214	85	93	339	229	75	68	267	161	46	45	240	125	29	47	2,501

(4) REGISTRATION FOR GRADUATE COURSES

	Ph.D.	M.A.	M.D.	M.A.Sc.	C.E.	M.E.	E.E.	D.Paed.	M.S.A.	Grad.
Dept. of Anthropology	..	1	..	..	..	..	..	..	..	..
" " Biochemistry	3	2	..	..	..	..	..	..	..	..
" " Biology	11	2	..	..	..	..	..	..	1	1
" " Botany	10	7	..	..	..	..	..	..	2	..
" " Chemical Engineering	..	..	..	1	..	..	..	..	..	..
" " Civil Engineering	..	..	..	..	3	..	..	..	..	..
" " Chemistry	13	7	..	..	..	..	..	..	3	..
" " Classics	..	3	..	..	..	..	..	..	..	9
" " Educational Theory	1	..	..	..	..	..	..	..	..	2
" " English	..	16	..	..	..	..	..	..	..	22
" " Food Chemistry	..	1	..	..	..	..	..	..	..	2
" " Forestry	..	1	..	..	..	..	..	..	..	..
" " Geology	4	6	..	..	..	..	..	..	..	..
" " German	1	1	..	..	..	..	..	..	..	1
" " History	3	12	..	..	..	..	..	..	..	2
" " Household Science	..	2	..	..	..	..	..	..	..	2
" " Hygiene and Prev. Med	2	2	..	..	..	..	..	..	..	..
" " Mathematics	2	2	..	..	..	..	..	..	..	1
" " Mineralogy	3	3	..	..	..	..	..	..	..	..
" " Mining Engineering	..	..	..	2	..	1	..	..	..	..
" " Pathology and Bacteriology	1	..	..	..	..	..	..	..	..	..
" " Pathological Chemistry	1	..	..	..	..	..	..	..	..	..
" " Pedagogy	..	..	..	..	..	..	..	64	..	..
" " Pharmacology	..	..	..	..	..	..	..	..	..	1
" " Philosophy	6	25	..	..	..	..	..	..	..	16
" " Physics	12	7	..	..	..	..	..	..	..	1
" " Physiology	5	5	1	..	..	..	..	..	..	..
" " Political Science	3	8	..	..	..	..	..	..	3	2
" " Psychology	3	10	..	..	..	..	..	..	..	12
" " Romance Languages	1	18	..	..	..	..	..	..	..	11
" " Semitic Languages	6	5	..	..	..	..	..	..	..	3
" " Zymology	..	1	..	..	..	..	..	..	..	..
" " Electrical Engineering	..	..	..	..	..	..	1	..	..	..
Special Committee	..	1	..	..	..	..	..	..	..	1
Totals	91	148	1	3	3	1	1	64	9	89

APPENDIX C

RESULTS OF EXAMINATIONS

(1) Faculty of Arts.
(2) Faculty of Medicine.
(3) Faculty of Applied Science and Engineering.
(4) Faculty of Household Science.
(5) Ontario College of Education.
(6) Faculty of Forestry.
(7) Faculty of Music.
(8) Faculty of Dentistry.

(1) Faculty of Arts

First Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred
Pass	..	204	62	47	52	365	168	77	120	..	5	..	42
Supplementals	..	53	38	12	21	124	85	39	..	..	1	..	..
Classics	..	7	5	4	..	16	13	..	..	3	..	..	..
French, Greek and Latin	..	5	3	..	1	9	6	..	..	3	..	..	..
English and History	..	27	23	9	8	67	44	1	..	22	1	..	..
Modern Languages	..	23	17	7	6	53	44	..	..	9	..	..	..
Modern History and Political Science	..	10	5	2	..	17	10	1	..	6	..	..	..
Philosophy	..	1	..	..	..	1	..	..	..	1	..	..	..
Philosophy (English or Hist. Option)	..	1	7	..	..	8	6	..	..	2	1	..	..
Mathematics	..	3	3	..	..	6	2	1	..	3	..	..	..
Mathematics and Physics and Physics and Chemistry	..	17	22	3	1	43	22	3	..	18	..	1	1
Natural and Physical Sciences	..	26	20	2	..	48	31	10	..	7	2	1	4
Household Economics	..	14	12	2	1	29	28	..	..	1	..	..	..
Commerce and Finance	..	64	28	8	3	103	45	10	..	48	..	..	3
Occasional Students	..	5	..	1	1	7	3	1	3	..	..	..	..
Registered twice	..	..	1	..	..	1	1	..	..	..	..	..	..
Totals	..	460	244	97	94	895	506	143	123	123	10	2	50

Second Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred	Transferred & Debarred
Pass	..	130	97	44	44	315	169	67	79	..	11	..	17	..
Supplementals	..	32	19	10	6	67	44	23	..	..	1	..	..	..
Classics	..	7	5	2	2	16	15	1	..	..	..	..	..	..
Oriental Languages	..	..	2	..	..	2	1	1	..	..	..	1	..	..
French, Greek and Latin	..	1	2	1	..	4	4	..	..	..	..	..	..	..
English and History	..	13	17	2	5	37	34	1	..	2	3	..	1	..
Modern Languages	..	20	15	2	5	42	37	..	..	5	1	..	1	1
Modern History	..	12	9	5	..	26	19	2	1	4	3	..	..	..
Political Science	..	25	16	5	2	48	30	1	1	16	1	..	1	6
Philosophy	..	3	12	1	6	22	17	..	1	4	..	..	1	1
Philosophy (Eng. or Hist. Option)	..	2	1	..	1	4	4	..	..	..	..	..	..	..
Mathematics	..	2	4	..	..	6	3	1	2	..	..	..	..	..
Mathematics and Physics	..	13	16	..	1	30	13	4	6	7	..	..	..	2
Physics and Chemistry	..	..	..	1	..	1	..	..	..	1	..	..	..	..
Physics and Geology	..	..	..	1	..	1	1	..	..	..	..	..	..	..
Physics	..	1	1	..	..	2	2	..	..	..	..	..	..	..
Biology	..	..	2	..	..	2	2	..	..	..	..	..	..	..
Physiology and Biochemistry and Biological and Medical Sciences	..	20	7	3	..	30	13	8	2	7	..	1	..	3
Chemistry	..	4	..	..	..	4	3	..	1	..	..	..	..	..
Chemistry, Mineralogy & Geology	..	..	1	..	..	1	1	..	..	..	..	..	..	..
Geology and Mineralogy	..	..	1	..	..	1	..	1	..	..	..	1	..	..
Science (General)	..	1	..	..	..	1	1	..	..	..	..	..	..	..
Household Economics	..	20	6	2	..	28	18	8	1	1	1	1	1	..
Commerce and Finance	..	50	8	5	1	64	32	5	11	16	..	1	..	11
Occasional Students	4	2	1	..	..	7	6	1	..	..	..	..	..	..
Registered twice	..	1	..	..	..	1	1	..	..	..	..	..	..	..
Totals	4	357	242	84	73	760	468	124	105	63	21	5	22	24

Third Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred	Transferred & Debarred
Pass	..	111	65	22	27	225	151	38	36	..	10	..	18	..
Supplementals	..	17	8	5	8	38	35	3	..	..	..	..	..	..
Classics	..	6	7	..	..	13	12	..	..	1	..	..	..	1
Oriental Languages	..	..	..	2	..	2	1	..	..	1	..	..	..	1
French, Greek and Latin	..	1	1	..	2	4	3	1	..	..	..	1	..	..
English and History	..	8	11	4	2	25	25	..	..	..	1	..	..	..
Modern Languages	..	21	12	1	5	39	36	1	1	1	3	..	..	1
Modern History	..	10	4	3	..	17	17	..	..	..	1	..	..	..
Political Science (Economics)	..	5	6	2	..	13	11	1	1	..	..	..	..	..
Political Science (Politics & Law)	..	8	4	1	..	13	10	..	3	..	..	..	..	..
Philosophy	..	6	3	2	5	16	12	3	..	1	2	1	..	1
Philosophy (English or History Option)	..	5	3	..	..	8	6	2	..	..	1	..	1	..
Mathematics	..	7	2	..	..	9	5	1	3	..	..	..	..	..
Mathematics and Physics	..	9	2	3	..	14	12	1	1	..	..	..	..	..
Physics and Chemistry	..	1	..	..	..	1	1	..	..	..	..	..	..	..
Biology	..	3	..	..	..	3	3	..	..	..	..	..	1	..
Biological and Medical Sciences	..	10	12	1	..	23	23	..	..	..	..	..	..	..
Chemistry	..	1	1	..	..	2	2	..	..	..	..	..	..	..
Chemistry, Mineralogy and Geology I	..	7	1	1	..	9	7	2	..	..	..	1	..	..
Chemistry, Mineralogy and Geology II	..	1	..	..	..	1	1	..	..	..	..	..	..	..
Geology and Mineralogy	..	1	2	..	..	3	1	2	..	..	..	1	..	..
Household Economics	..	12	13	3	2	30	25	5	..	..	1	2	..	..
Commerce and Finance	..	31	9	1	1	42	39	2	1	..	..	..	1	..
Totals	..	281	166	51	52	550	438	62	46	4	19	6	21	4

Fourth Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	Totals	Passed	Starred	Failed	Aegrotat	Pass Degree	Granted standing on Active Service
Pass	..	104	54	14	24	196	169	19	8	6	..	7
Supplementals	..	7	3	1	..	11	7	4	..	..	..	..
Classics	..	3	3	..	2	8	8	..	..	..	..	..
Greek and Hebrew	..	1	..	..	..	1	1	..	..	..	..	..
French, Greek and Latin	..	1	..	..	1	2	2	..	..	..	..	..
English and History	..	19	14	1	4	38	38	..	..	..	..	..
Modern Languages	..	14	11	4	5	34	34	..	..	2	..	..
Modern History	..	7	4	..	..	11	11	..	..	..	1	..
Political Science (Economics)	..	10	3	1	1	15	15	..	..	1	1	..
Political Science (Politics and Law)	..	7	3	1	..	11	11	..	..	..	1	..
Philosophy	..	4	1	1	6	12	11	1	..	1	..	..
Philosophy (English or Hist. Option)	..	1	3	..	..	4	4	..	..	..	..	..
Mathematics	..	4	2	..	1	7	7	..	..	..	1	..
Mathematics and Physics I	..	5	..	1	..	6	6	..	..	1	1	..
Mathematics and Physics II	..	6	2	2	..	10	10	..	..	1	..	..
Physics	..	2	2	..	..	4	4	..	..	..	..	..
Biology	..	2	1	..	..	3	3	..	..	..	..	..
Biological and Medical Sciences	..	12	6	2	1	21	18	1	2	..	2	..
Chemistry	..	2	..	..	..	2	2	..	..	..	..	..
Chem., Mineral. and Geol. I	..	2	2	..	..	4	4	..	..	..	..	..
Chem., Mineral. and Geol. II	..	2	..	..	..	2	2	..	..	..	..	..
Science (General)	..	..	1	..	..	1	1	..	..	..	..	..
Psychology	..	1	..	..	..	1	1	..	..	..	..	..
Commerce and Finance	..	22	4	..	2	28	25	3	..	2	..	..
Occasional Students	1	..	..	..	..	1	1	..	..	..	..	..
Totals	1	245	128	29	47	450	411	29	10	14	7	7

TEACHERS' CLASSES

All Years

	Passed	Starred	Total
May Examination	157	59	216
September Examination	148	35	183
	305	94	399
Duplicates			114
Totals			285

(2) FACULTY OF MEDICINE

	Passed	Starred	Failed
First Year	73	27	12
Second Year	88	20	1
Third Year	83	23	16
Fourth Year	97	14	6
Fifth Year	99	9	1
Sixth Year	100	7	..
Diploma in Public Health	5	..	..
B.Sc. (Med.)	5	..	..
Totals	550	100	36

(3) FACULTY OF APPLIED SCIENCE AND ENGINEERING

	Passed with Honours	Passed	Starred	Failed
First Year—				
Civil Engineering	1	15	8	4
Mining Engineering	1	24	13	4
Mechanical Engineering	2	19	11	3
Architecture	..	10	7	4
Chemical Engineering	10	30	12	10
Electrical Engineering	5	29	11	8
Metallurgical Engineering	2	2	1	1
Second Year—				
Civil Engineering	1	14	9	1
Mining Engineering	1	14	5	2
Mechanical Engineering	1	18	10	8
Architecture	..	5	1	1
Chemical Engineering	10	25	17	..
Electrical Engineering	9	24	12	8
Metallurgical Engineering	..	5	2	1
Third Year—				
Civil Engineering	2	12	4	..
Mining Engineering	1	6	3	1
Mechanical Engineering	5	14	4	4
Architecture	3	9	1	..
Chemical Engineering	2	13	8	1
Electrical Engineering	2	21	14	4
Metallurgical Engineering	..	6	4	..
Fourth Year—				
Civil Engineering	4	15	2	..
Mining Engineering	3	5	2	..
Mechanical Engineering	4	15	4	1
Architecture	2	4	..	1
Chemical Engineering	4	10	2	..
Electrical Engineering	7	19	6	..
Metallurgical Engineering	1	3	1	..
Totals	83	386	174	67

(4) FACULTY OF HOUSEHOLD SCIENCE

	Passed	Starred	Transferred to Pass Course	Failed
First Year	26	13	1	6
Second Year	17	11	2	3
Third Year	22	7	..	..
Fourth Year	17	..	..	..
Totals	84	31	3	9

(5) ONTARIO COLLEGE OF EDUCATION

	Passed	Failed
*High School Assistants' Course	244	..
Specialists' Courses	113	..
First Class Public School Course	17	..
Elementary Art Course	37	..
Elementary Physical Education Course	133	..
One Year Household Science Course	11	..
Bachelor of Pedagogy Course	21	..
Bachelor of Pedagogy Course (passed in part)	39	..
Number who failed in whole or part	..	53
Totals	615	53

*Many of these are included among those who passed or failed in the other courses in this list.

(6) FACULTY OF FORESTRY

	Honours	Starred	Failed
First Year	17	3	4
Second Year	8	5	2
Third Year	5	4	..
Fourth Year	10	..	..
Totals	40	12	6

(7) FACULTY OF MUSIC

	Passed	Starred	Failed
First Year	7	..	2
Second Year	4	5	..
Third Year	2	..	11
Doctor of Music	1	..	..
Totals	14	5	13

(8) FACULTY OF DENTISTRY

	Passed	Starred	Failed
First Year	17	6	1
Second Year	50	5	2
Supplementals, student not in attendance	..	1	..
Third Year	51	10	..
Supplementals, student not in attendance	1	..	..
Fourth Year	42	9	3
Fifth Year	57	4	..
B.Sc. (Dent.) Candidates	5	..	3
Dental Nurses	16	..	..
Totals	239	35	9

APPENDIX D

Geographical Distribution of Students

The geographical distribution of students is as follows:

FACULTY OF ARTS

	University of Toronto	University College	Victoria College	Trinity College	St. Michael's College	Duplicates	Totals
Ontario: (1) Province....	253	496	444	130	113	16	1,420
(2) Toronto....	256	738	223	94	114	12	1,413
Nova Scotia.....	..	1	1	2	..	..	4
New Brunswick.....	..	2	2	1	2	..	7
Prince Edward Island....	..	5	..	..	..	..	5
Quebec.....	4	2	2	..	1	1	8
Manitoba.....	1	3	..	..	..	..	4
Saskatchewan.....	3	15	28	1	..	..	47
Alberta.....	1	8	8	3	1	..	21
British Columbia.....	2	8	2	..	..	..	12
Yukon.....	..	4	..	..	..	..	4
United States.....	5	24	4	7	25	..	65
Elsewhere.....	3	9	19	3	2	2	34
Duplicate registrations...	..	..	..	..	..	31	..
Totals.....	528	1,315	733	241	258	..	3,044

SUMMARY

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry.	Department of Social Service	Department of Public Health Nursing	Course in Occupational Therapy	Duplicates	TOTALS
Ontario:														
(1) Province	1,420	312	265	53	223	26	8	133	152	31	142	14	31	2,748
(2) Toronto	1,413	354	251	72	145	20	22	186	62	46	72	25	37	2,631
Nova Scotia	4	4	..	..	1	..	..	10	1	6	3	..	1	28
New Brunswick	7	..	1	..	3	..	..	5	3	3	3	..	..	25
Prince Edward Island	5	..	..	..	..	1	..	2	2	..	1	..	..	11
Quebec	8	3	1	..	3	2	..	7	1	2	2	..	1	28
Manitoba	4	1	2	..	10	1	..	9	29	1	2	1	..	60
Saskatchewan	47	21	9	3	11	..	2	13	19	2	2	..	2	127
Alberta	21	7	5	2	..	1	1	7	4	1	..	..	..	49
British Columbia	12	31	5	..	5	..	..	17	3	4	2	..	..	79
Yukon	4	..	..	..	..	..	..	..	..	..	..	..	..	4
United States	65	12	2	..	8	..	4	6	5	1	1	..	1	103
Elsewhere	34	11	9	1	..	7	..	15	3	5	10	..	2	93
Totals	3,044	756	550	131	409	58	37	410	284	102	240	40	75	5,986

The students from the Province of Ontario are distributed as follows:

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Service	Department of Public Health Nursing	Course in Occupational Therapy	Duplicates	TOTALS
Algoma	12	8	5	..	2	..	..	1	3	..	3	..	1	33
Brant	36	10	8	1	4	..	..	4	1	1	3	1	1	68
Bruce	33	7	5	1	10	..	..	1	8	2	4	1	1	71
Carleton	51	5	6	3	16	..	1	3	14	4	3	..	1	105
Cochrane	1	..	..	..	..	..	..	..	..	..	..	..	..	1
Dufferin	10	5	2	2	3	..	..	4	2	..	1	1	4	26
Dundas	13	..	1	1	3	..	..	..	1	..	2	..	..	21
Durham	31	8	2	..	2	..	1	2	1	1	1	..	1	48
Elgin	19	5	6	1	5	1	..	2	4	2	..	1	..	46
Essex	42	12	6	3	9	..	..	6	6	1	..	..	1	84
Frontenac	1	..	..	..	8	..	..	1	..	1	2	..	1	12
Glengarry	3	1	..	1	4	..	..	..	..	..	..	..	..	9
Grenville	9	1	..	..	3	..	..	3	..	1	..	..	..	17
Grey	40	8	11	3	7	..	..	4	1	1	9	1	..	85
Haldimand	26	5	5	..	3	..	..	2	..	..	2	..	1	42
Haliburton	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Halton	40	7	10	3	..	..	..	2	3	..	4	1	1	69
Hastings	19	7	2	..	4	..	..	1	2	..	6	..	..	41
Huron	53	12	5	..	9	2	..	4	6	..	2	..	..	93
Kenora	10	..	1	..	1	..	..	..	2	1	..	..	..	15
Kent	22	7	5	1	1	..	..	2	3	..	..	..	1	40
Lambton	27	5	1	1	4	1	..	6	4	..	3	..	..	52
Lanark	24	..	1	..	6	..	..	2	8	1	4	..	..	46
Leeds	10	1	3	..	4	1	..	1	3	..	2	..	1	24
Lennox & Addington	12	..	..	1	3	..	..	..	..	..	1	..	..	17
Lincoln	32	7	10	2	6	1	1	3	2	..	4	1	..	69
Manitoulin	5	..	1	..	..	..	..	..	..	..	..	..	..	6
Middlesex	20	3	8	2	17	1	..	16	6	..	4	..	1	76
Muskoka	9	2	6	..	2	..	..	3	2	1	2	..	..	27
Nipissing	9	8	..	..	2	..	..	1	3	..	5	..	1	27
Norfolk	17	8	3	1	2	..	..	..	2	..	1	..	..	34
Northumberland	23	5	6	..	1	..	..	2	2	..	2	..	..	41
Ontario	57	13	8	4	6	1	..	3	3	1	7	..	..	103
Oxford	31	6	7	..	6	..	1	1	..	1	2	..	..	55
Parry Sound	5	..	2	2	3	1	..	1	4	..	5	..	..	23
Peel	41	10	9	2	1	1	..	2	1	..	5	1	..	73
Perth	48	9	9	..	3	1	..	5	2	..	2	..	2	77
Peterborough	31	7	4	3	7	..	..	1	2	1	3	1	1	59
Prescott	..	..	..	..	5	..	..	..	1	..	..	..	..	6
Prince Edward	2	3	..	..	2	..	..	2	1	..	1	..	..	11
Rainy River	4	..	..	..	1	..	..	..	1	..	..	..	..	6
Renfrew	16	2	..	1	6	2	..	1	2	..	3	..	..	33
Russell	2	1	..	..	1	..	..	..	..	..	..	..	..	4
Simcoe	95	16	12	3	6	2	..	4	6	2	8	1	3	152
Stormont	5	1	..	..	3	..	..	..	1	..	2	..	..	12
Sudbury	9	2	1	1	1	1	..	..	..	..	..	..	..	15
Thunder Bay	22	3	12	..	1	1	1	..	2	..	..	..	..	42
Timiskaming	8	1	1	..	1	..	..	1	1	..	2	..	..	15
Victoria	13	5	3	..	2	..	..	1	..	..	1	..	..	25
Waterloo	62	13	11	1	1	1	..	1	3	..	5	..	3	95
Welland	35	11	7	1	2	..	..	2	5	1	3	..	1	66
Wellington	53	15	7	2	6	..	1	15	3	..	9	..	2	109
Wentworth	133	29	18	4	8	1	1	9	11	4	4	3	1	224
York	89	18	35	2	10	7	1	8	14	4	10	1	1	198
Toronto	1,413	354	251	72	145	20	22	186	62	46	72	25	37	2,631
Totals	2,833	666	516	125	368	46	30	319	214	77	214	39	68	5,379

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